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FOOD INDUSTRIES

THE NEWS OF • PRODUCTION • ENGINEERING • DISTRIBUTION

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BAKERY PRODUCTS

BEVERAGES

CANNED AND PRESERVED FOODS

CONFECTIONERY AND CHOCOLATE

DAIRY PRODUCTS AND ICE CREAM

FATS AND OILS

FLOUR AND CEREAL PRODUCTS

MEATS AND MEAT PRODUCTS

OTHER FOODS AND SPECIALTIES

•

END OF UNCERTAINTY

The big uncertainty is past. Elections are over . . . For at least six years, there is every indication that the nation will continue under the present administration.

Business policies must be shaped with that outlook in view . . . Political uncertainty cannot be a reason or an excuse for inaction . . . Business must drive ahead under existing conditions.

DECEMBER 1934

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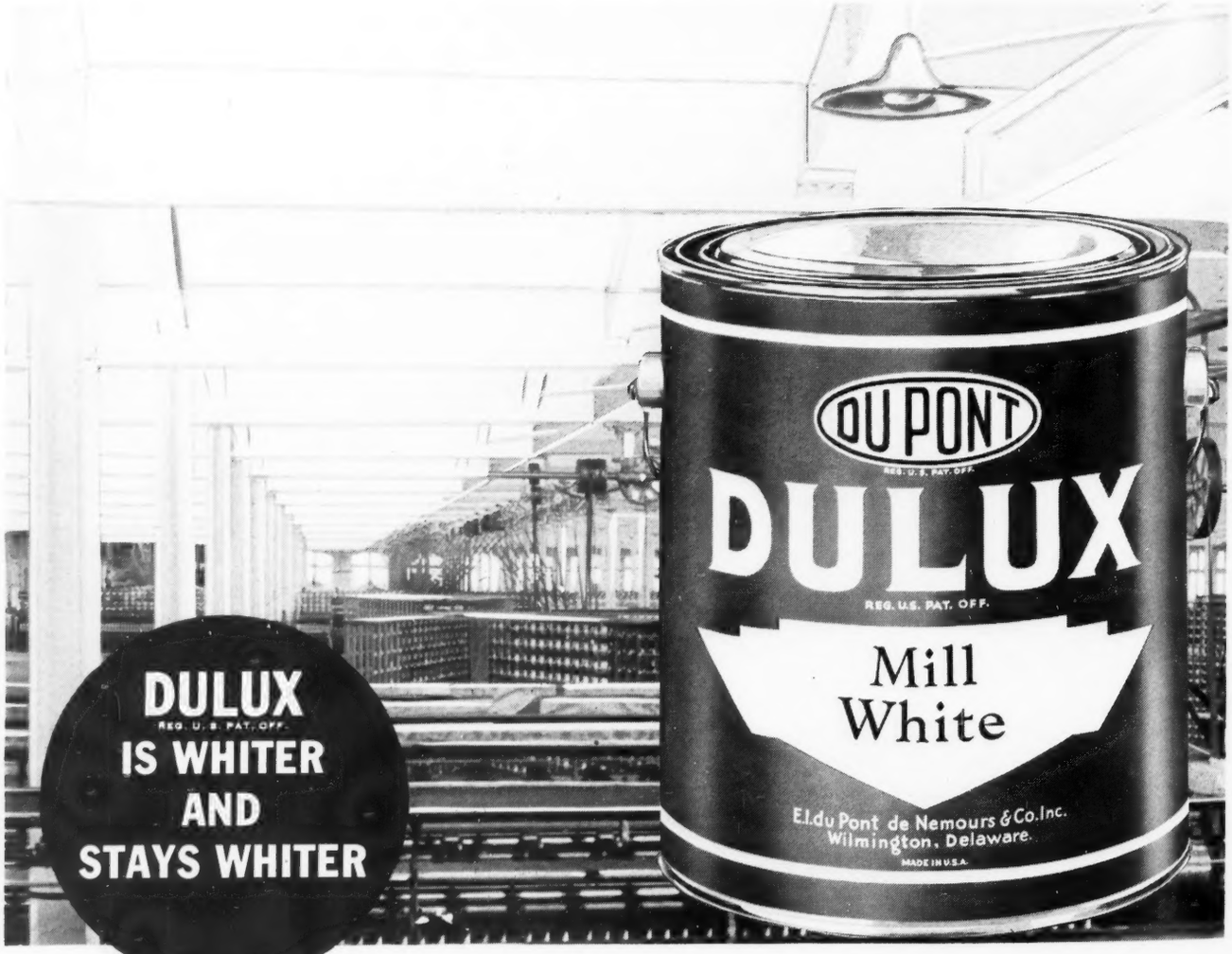

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FOOD INDUSTRIES

NEWS OF PRODUCTION • ENGINEERING • DISTRICTION

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This photograph shows Taylor Instruments for cooling-liquid temperature and return pressure control. Both are installed in the refrigeration room of the Hoffman Beverage Company's brewery.

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FOOD INDUSTRIES

THE NEWS OF . PRODUCTION . ENGINEERING . DISTRIBUTION

Established 1928—McGraw-Hill Publishing Company, Inc.
Volume 6 Number 12

New York, December, 1934 . . . Laurence V. Burton, Editor

Elections Are Past . . . What's Ahead?

NOW that elections are over, manufacturers must interpret the voice of the people correctly in terms of economics. The President has scored a victory in the field of politics. Next comes the attack on the field of economics.

Outstanding among the first measures to come before the next Congress are: (1) Food and Drug Law revision; (2) revival of the "lost amendments" to A.A.A.; (3) social insurance; (4) reenactment of N.I.R.A.

Food and Drug Law

Many bills to revise the Food and Drug Law will be introduced. Senator Copeland announced in October that if reelected he would present a food and drug bill. Undersecretary Tugwell has expressed hope that Senator Copeland will not have anything to do with the department's bill. All of which sounds as if there will be two important bills.

Of the other bills to be introduced, none will receive serious consideration.

All concerned must give serious thought to what is wanted in a good law. All must be prepared to make some concessions. Congress will pass any bill the President wants, and he wants a strong food and drug law.

We reprint our own editorial statement made in June, 1934:

"As a matter of practical politics we are veering to the opinion that the food industries would be better off if the revision of the food and drug law were enacted this summer than to take a chance on what may happen next year . . .

"The *Literary Digest* poll of public opinion should give pause to all who counsel delay . . ."

In the opinion of FOOD INDUSTRIES, the June 5 revision of S. 2800 of the past Congress will make an excellent starting point for the final bill. For most food industries this bill will be very nearly acceptable. The wording of a few clauses can be trued up to advantage to define in more exact English their intended purpose.

It is to be hoped that the Food and Drug Administration will continue its gestures of cooperation and during the coming month consult with food manufacturers. A few overtures have been made so far, but the follow-up has been delayed. The time to reconcile misunderstandings and disagreement is *before* the bill gets into Congress.

"Lost Amendments" to A.A.A.

It is certain that A.A.A. will be amended "to clarify" the act. The attempted "clarification" in the past Congress, fortunately, was killed. It planned to give the Secretary of Agriculture power to license food-processing industries and to allocate production, and to assess the costs on the industry whether it wanted the imposed control or not. The original Tugwell Bill was tame compared to this.

Social Legislation

Ever since the President's Green Bay speech the nation has been warned that social legislation is ahead. Unemployment insurance in particular will receive some form of federal boost. Business should organize its thinking *and decide what it wants*—not what it does not want.

National Industrial Recovery Act

Business has crabbed a lot about N.R.A. Today that picture has changed. Business wants to continue to operate under codes of fair competition. The present law expires in a half year. The old law was extemporized and enacted without adequate debate in Congress. Any new law should be developed with exceeding care and deliberation.

Business is developing its own versions of a workable law, and there is hope for a more satisfactory "partnership of government with business." A battle over 7A can be expected.

As It Looks To Us

Miscellany . . .

Good news: Tugwell is back.

The way to the Left is an open book—in fact, many books have been written about it.

For five years the country has tried to find the way to return to profitable private enterprise. Let's keep on trying.

Congratulations to the many food manufacturers who have started at work on Food and Drug Law revision before the new Congress convenes! Quite a contrast to the summer of 1933!

To understand the President's program, say the astute students of politics, it should always be remembered that he likes the middle of the road. If there is no middle, he creates it by fostering the development of the opposition. This is said to account for the continued existence of the extremists in the Department of Labor.

Unemployment continues greatest in the durable goods industries. A thousand dollars spent for new equipment will do more to create employment than a thousand dollars paid out for relief. The money must be paid out anyhow. Taxes will take it if business does not pick up. In one case you get the equipment for your money. In the other, an item on the ledger.

Improving Palatability of Milk . . .

Homogenized fluid milk is a commercial development in line with a constructive philosophy for the development of commercial food processing.

When the factory can do a better job than can be done at home or when it can produce a better tasting food than can be made at home, that industry will nearly always prosper.

Factory homogenizing of whole milk gives it a flavor very much like half-and-half, though very few American cities permit its sale under any condition despite its better flavor and greater ease of digestion. Canada is more advanced in this respect.

After the few American cities which are at present experimentally allowing the sale of homogenized milk under careful control report a satisfactory experience, we can expect a wider extension of this treatment to make milk more palatable.

It Has Come to This!

An arsenal in a food manufacturing establishment is one of the most astonishing things we have seen during the past month. The plant, it happens, fell under the envious eye of a fairly well-known communist agitator who proved to be a spellbinder of no mean order. He succeeded in stirring up riots among a group of peaceful and apparently happy workers. The only issue was recognition of his newly organized communist union with himself as the sole representative of the workers. As far as we can ascertain, this gentleman was pursuing the sort of tactics that have proved successful in the past when a labor racketeer decided to move into more lucrative fields.

Failing to impress the management, he incited the workers against the company, arousing their passions to a point where they began to demolish the place where they gained their livelihoods. The management informed us that it was slightly disconcerting to try to run the place with bricks and stones popping through the windows. A few days of such operating conditions convinced them that their efforts were better directed at keeping the factory from being totally wrecked. And here is where the arsenal came into play.

Tear-gas bombs were thrown as light-heartedly as confetti at a carnival, until it was noted that each bomb cost $13.50. After that the bombs were used only when fire hose and clubs had failed.

The superintendent gravely pointed out his choice in bombs, exhibiting marked preference for one that exploded in only one second after throwing and at the same time became too hot to be picked up and thrown back. We were duly instructed in the various uses of the riot gun; and by a case study were shown how a well-placed shot with the gun, although costing about $25 per projectile, was highly effective in clearing out of a building a group who were bent on its total destruction.

An arsenal in a food plant was a novelty to us. It should not be necessary, but when a plant is located outside the zone of police protection there seems to be no other way.

True Labels That Mislead . . .

Official attack on truth which seems to say more than it should has begun in the beverage field. Uncle Sam's investigators do not like a label saying: "Does not contain more than 6 per cent of alcohol by volume," especially when the 6 per cent is in large type and the beer has less than 4 per cent alcohol. They think kick seekers are unlawfully deceived into purchase of this beverage.

Label designers cannot be too careful these days. Like Cæsar's wife, the label must be above suspicion. "Smartness" in label making will not pay.

How Many Future Consumers?

Fears have been expressed by economists and statisticians over the future trend of population. They base their dire predictions on the vital statistics of the United States and the rapid spread of the knowledge of methods of birth control, the economic importance of which is far reaching and is a force with which the world has never before had to contend.

Trends of this kind must be reckoned with in national affairs, also in corporate affairs. If the population is to fall off, what of our agriculture, our cities, our industries? People are consumers as well as producers.

To anyone who is given to brooding over vast events over which he has no control nor even the slightest influence, this picture looks bad—a few

decades hence. Yet it is not necessarily a hopeless matter even from that very long-range viewpoint.

Recent scientific discoveries indicate that the average span of life is to be lengthened. To cite a single instance, the announcement of the discovery of pure, synthetic vitamin C and what it will do when injected into the blood stream, curing a number of hitherto incurable diseases, is one of the factors which, if confirmed will do much to offset the diminishing birth rate.

A great preponderance of people past middle age in the days to come is indicated by these yet unconfirmed results of scientific research. It may be that fewer deaths will be tough on the coffin maker and the undertaker, but older people eat food even as do children. And probably they can pay for it with more certainty than children can.

In contemplating the future of the world, one must be alert to the good as well as to the bad. Furthermore, people have been known to change their minds. One cannot be too positive about race suicide.

Pest Control Gives Opportunity . . .

The Mediterranean fruit fly, even in relatively dormant stages, is killed by refrigeration at 30 to 31 deg. F. when infested grapes are held at this temperature for fifteen days. There is every reason to believe that the hosts of other pests can be similarly made safe for distribution by a like treatment with cold.

This discovery is immediately affording new business for refrigerating establishments where Spanish grapes may be processed to permit their entry into this country. Other import goods should be investigated to see if they should be treated similarly. And there is a tremendous opportunity for possible new business if analogous treatment should prove effective for domestic pests, which we are just as anxious to control as these unwanted foreign ones.

A Schooner of Beer . . .

Somehow the idea of a sea-going brewery aboard the old schooner "Alumnus," as related in recent press dispatches from Seattle, sounds very much like another of those harebrained schemes that continually come to an editor's desk. Many of these have their origin in the uninformed imaginings of some technologic or economic spellbinder who has persuaded some innocent news gatherer that the millennium is here. As a rule, newshawks are cynics (editors have to be); but in this instance the protective barriers seem to have been dissolved.

One wonders in just what part of the Pacific Ocean will be found the right quality of fresh water for making beer, for washing tanks, barrels and bottles; or one speculates on why, if agitation is a good thing for beer, there are no mechanical stirrers on fermentation and storage tanks in the breweries on land.

Obscure Causes of Trouble . . .

Those who have used garlic in food manufacture probably are more or less acquainted with its peculiarities. It has a flavor that, in extremely discreet quantities, is delightful. But when overindulged or misused as a flavor, it may cause consternation.

Our own recollections on this point are vivid. A new catsup cook was once being broken in. Just at the point where a pail of ground onions and garlic was to be dumped into the 1,000-gal. tank, an interruption occurred, and this part of the ingredients was forgotten for about 20 minutes. It was hastily added just about the end of the cook.

The quantity added was correct but the catsup tasted as if there were fifty times too much. Fortunately, it was packed in No. 10 cans which would later be cut open and salvaged by adding to other batches at the rate of about five cans to each cook. As it was, the product would have been absolutely unsalable. It was the first time we had realized the power of this volatile flavor, but, what is more important, how great a variation of flavor can be introduced by changing the sequence of adding the ingredients to a batch.

If a formula has been developed in such a way that a given sequence of additions is required it is a wise man who will stick to that order and let the research department do the experimenting. Any variation may result in disaster like the one just related. Sometimes it may result in hydrolysis of sugars, carmelization, volatilization of flavors, or a dozen other sources of grief. And the product itself will often taste as if it had been made from a wholly different formula.

Production Side of Packaging Recognized

All production men will be gratified to learn that the American Management Association has at last begun to recognize the production phase of packaging. Many a plant superintendent in the country has, at one time or another, "cussed out" his sales department for going haywire by designing packages solely from the standpoint of merchandising while at the same time ignoring or forgetting that packaging is still done in the factory.

At the next packaging show the utilitarian aspect of packaging will be discussed—and not only that, it will be rewarded. A packaging award, something parallel to the Wolf award for excellence of design for beauty, will be granted, as announced elsewhere.

If your company has done something worth while in packaging for utility, be sure to enter the package in the contest. Your package does not have to be all dolled up in modernistic design to receive consideration by a jury of practical men. A better method of insect-proofing a package, an improved acid-proof backing to a compo. liner in a metal cap, a neutral liner that prevents rancidity in a carton—these and many other such utilitarian developments are the things that are going to be recognized at the next packaging exposition in Chicago in March, 1935.

Redistribution . . .

One of the rather articulate groups in the body politic of this country demands a redistribution of income. Under this plan everybody would share alike. The Big Boss would receive no more than a broom pusher.

Well, how much would wage earners receive per month if all the workers, all the salaried groups and all the proprietors of business received identical sums? The answer to this question has been given by Leonard P. Ayers, of the Cleveland Trust Co. He takes the government's own figures on national income for 1929 and shows that the average monthly wage paid per worker, in what is regarded as a fairly good year, was $119. Then he calculates that if the total income of corporations were to be redistributed equally, the average wage per worker would be $131. The increase is so small that it will be very disappointing to those who expected more.

Conditioned Air

In Production Savings and Quality, as Demonstrated

Air-conditioning in food plants, far from being a luxury, is necessary to prevent production delays, obtain quality and protect the product. Confectioners, bakers, meat packers, brewers, shortening manufacturers, fresh-fruit and vegetable packers and shippers, to take examples, find conditioned air as essential as do the chewing-gum manufacturers. Schrafft, for instance, has a 500-ton air-conditioning system in its Boston plant.

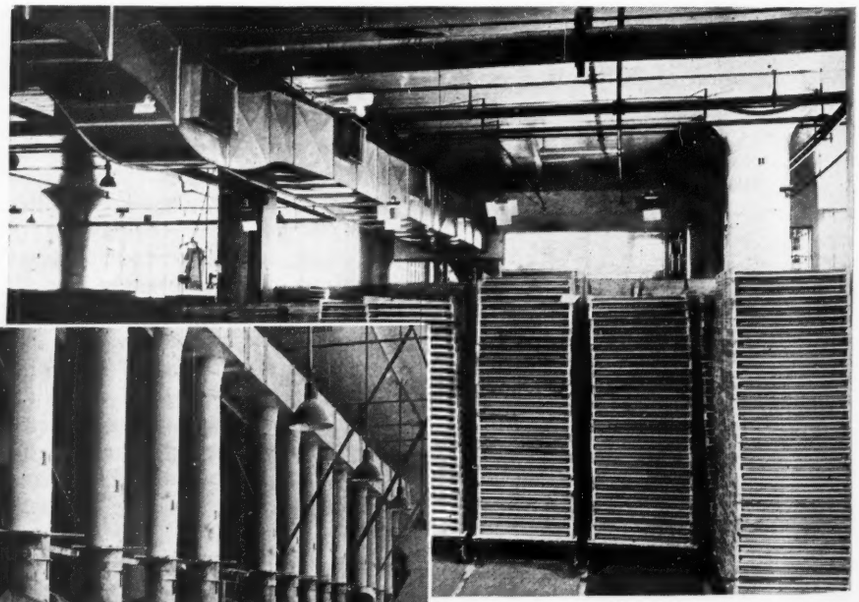
◆

By C. E. DE VIVO
Plant Engineer
American Chicle Co.

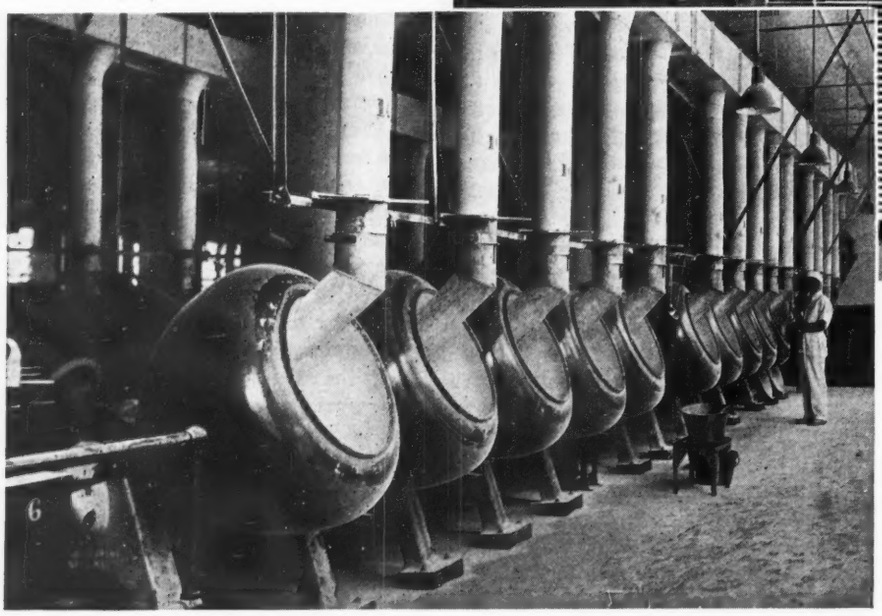
THAT conditioned air would improve the quality of its products and eliminate costly production delays was the decision reached by American Chicle Co. nearly twenty years ago. Through experience, the company had determined definite requirements of temperature and relative humidity for the different steps in its manufacturing processes. And when it constructed its present plant in Long Island City, N. Y., in 1920, it built into that plant a permanent air-conditioning system. This installation was at that time, and still is, for that matter, a huge air-conditioning plant —one that uses 450 tons of refrigeration and delivers some 115,000 cu.ft. of conditioned air per minute.

Installed at a cost of about $300,000, this system is still in operation, with a record of fourteen years of trouble-free service back of it. And even now it is effective and efficient. The operating cost varies from $200 a month in the winter, when no refrigeration is needed, to $3,500 a month in the hottest summer months. This cost, plus interest, depreciation and other charges, is more than offset by the cost of the production delays that would occur without air-conditioning. And on top of that, the quality of the chewing gum that comes out of the plant is much higher than would be possible were conditions dependent upon the elements.

Here's why American Chicle and other chewing-gum manufacturers need air-conditioning. Chewing gum is sensitive to changes in temperature and humidity. On cold, dry days it becomes so hard that it cannot be worked properly. On warm, moist days, it becomes soft, with the same result. Furthermore, to be palatable, chewing gum must have a certain quantity of moisture in it. To obtain this, the product must be processed in rooms where the humidity is above a certain level. But the humidity must not be too high. While excess



Chewing-gum conditioning room in American Chicle plant. The overhead duct discharges air of a temperature and relative humidity calculated to improve the product and condition it for the wrapping machines.



Coating pans and the ducts that supply them with conditioned air. These are only a few of the 117 coating pans in the chewing-gum plant.

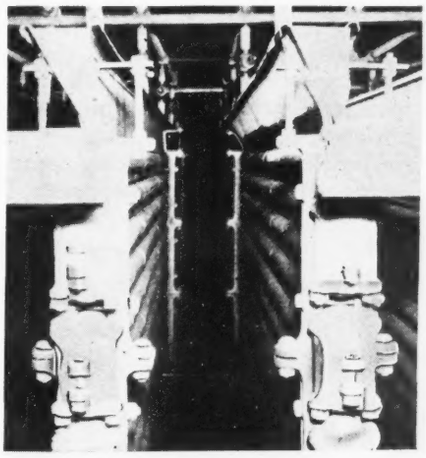
Pays Dividends

for Two Decades at American Chicle Company Plant

moisture within reasonable limits does not injure the quality of the chewing gum, it makes it too soft to be handled by the wrapping machines.

The need for air-conditioning in other food plants will be different from that in the chewing-gum factory. In candy plants, the chocolate will not "set" and develop a gloss unless the temperature and humidity are correct. Not only that, but the starch employed in casting centers must be kept under low humidity or it will not be effective in drying the centers. And hard candies of all varieties will become a sticky mass if the temperature and humidity in the plant become excessive. Appreciating all of this, Schrafft has equipped its Boston plant with a 500-ton air-conditioning unit which serves all of the candy-manufacturing departments except the cooking rooms.

In bakeries, the flour must be stored in rooms with the correct relative humidity to prevent formation of mold from too much dampness and to prevent the loss of moisture that would result were the air too dry. And the baker must watch the relative humidity in the rooms in which he keeps yeast, sugar, salt and powdered milk. Furthermore, best results are obtained in fermentation, proofing and wrapping with conditioned air.



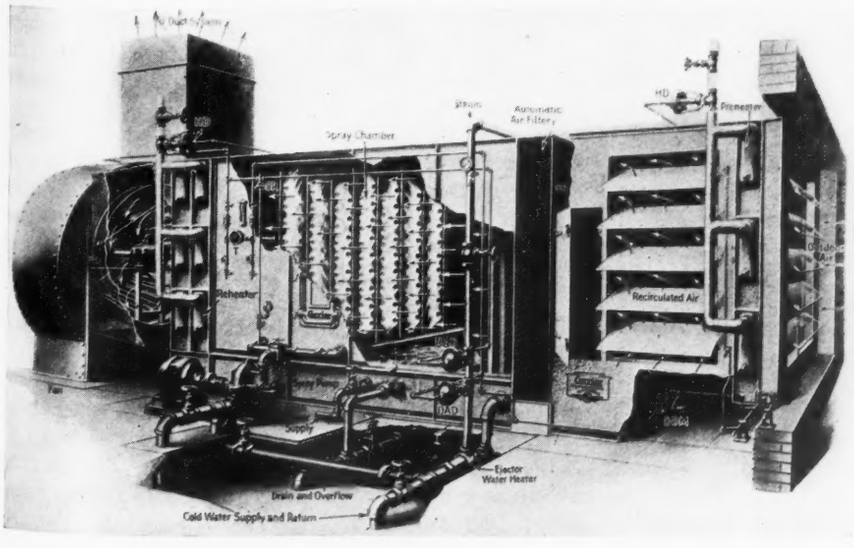
Sections of the 8,000 ft. of ammonia coils in the Beaudelot room, where the water for the humidifier-dehumidifier units is cooled.

Some factories which manufacture shortening compounds find air-conditioning necessary to prevent condensation of moisture on the chilling rolls, and they also employ controlled humidity in the packing rooms. Meat packers have to control the temperature and rate of air circulation in many of their departments to keep the meat cool and to prevent moisture from condensing on it. The modern method of handling and drying the better grade sausages requires that the operations be carried out under controlled temperature and humidity. And some packers filter and refrigerate the air supplied to their bacon-packaging rooms to protect this sensitive product against premature discoloration and molding.

Controlled humidity and temperature is required in the ripening of fruits and vegetables, as well as in the storage of these commodities. Brewers wash and cool the air supplied to wort cooling rooms and condition that in the aging and storing cellars for temperature and humidity. Food plants of every description, in fact, use temperature control, regulation of humidity or air-filtration as part of their daily manufacturing operations. And while each plant and each product has its own special set of conditions, the general principles of air-conditioning remain the same and the equipment used is of similar, though not duplicate, design.

Not many plants, however, have as many different requirements in the way of temperature and humidity as does American Chicle Co. and other chewing-gum manufacturers. In the chicle company's plant, conditioned air is used in the gum-conditioning, breaking, wrapping, coating and polishing departments and in the chicle and sen-sen drying rooms. In the first four departments mentioned, best operating conditions call for a temperature and a relative humidity which, as it happens, fall within the zone that is most conducive to human comfort. For the coating department, where the air is discharged directly into the pans instead of into the room, the temperature is somewhat higher and the relative humidity lower. In the rooms where the chicle and sen-sen are dried, a still higher temperature and lower humidity must be maintained.

From this, it is seen that air-conditioning under a wide range of specifications is needed in the American Chicle plant. Yet, the system employs a central refrigerating plant consisting of three 150-ton steam-driven, reciprocating compressors. There also is a common Beaudelot-coil room, where the water for conditioning the air is cooled as it trickles



Cut-away view of an air-conditioning unit that not only regulates temperature and relative humidity but filters the air as well. The humidifier units in the American Chicle plant are like this, except that the preheater and air filter are not included. This is a Carrier unit.

over some 8,000 ft. of direct-expansion ammonia coils arranged in two banks for flexibility. This has the advantage of centralizing the costly element of air-conditioning—refrigeration—and providing higher efficiency than would be possible with a whole series of small units which much of the time would have to be operated below capacity. With the centralized system, when the refrigeration demand falls off, the load can be carried with one or two compressors and one bank of Beaudelot coils. Like all centralized systems, however, there is the problem of distribution to the points of application. In this case a piping system is needed to carry the refrigerated water, and there are the losses inherent in conveying through pipes. Which brings the argument of centralization vs. the use of many small units down to the old axiom: "It depends on conditions." This makes it imperative that every plant analyze its set-up.

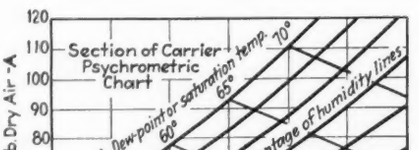
But, getting back to American Chicle's air-conditioning system, the water from the common Beaudelot room is delivered by three centrifugal pumps to six humidifier-dehumidifier units located where the air is needed.

The next step, the heart of the air-conditioning process, is the actual treatment of the air in the humidifier-dehumidifiers. Essentially, these units consist of four parts. The first is an air-mixing chamber where recirculation air from the room is combined with air from outdoors in a proportion that will give the proper temperature. The louvers controlling the quantities of the two kinds of air admitted are controlled in turn by a thermostat located in the spray chamber of the unit. In winter, if the dew-point temperature becomes too high, the thermostat, through compressed-air controls, manipulates the louvers to bring in more cold air from outside. If, on the other hand, the dew-point temperature is too low, more air is taken from the room and recirculated. In the summer, the system functions in the reverse manner, the seasonal change-over being made merely by operating a valve.

Automatic Dew-Point Control

After being properly proportioned, the air moves at a velocity of 500 to 600 ft. a minute through the spray chamber, where a rain of refrigerated water saturates it at a certain temperature, or, in other words, brings it to a certain dew-point temperature. A thermostat in the spray chamber controls the dew-point temperature through a three-way mixing valve which combines the cold water from the Beaudelot coils with water from the bottom of the spray tank to furnish a spray of the required temperature. The dew-point temperature is the factor which controls the relative humidity, since it determines the quantity of moisture the air will carry from the air-conditioner.

From the spray chamber, the air is delivered by a pressure blower over heating coils controlled by a thermostat in the room into which the air discharges. American Chicle finds that very little heating is necessary, however, except for the units serving the sen-sen- and chicle-drying departments and the coating department. In



Psychrometric chart showing relation between wet-bulb, dry-bulb and dew-point temperatures and relative humidity. With a dry-bulb temperature of 70 deg. and a wet-bulb temperature of 60 deg., for example, relative humidity is found to be 56 per cent by locating the point of intersection of the vertical line representing dry-bulb temperature and the oblique line representing wet-bulb temperature. And by following the intersecting horizontal line to the left to Curve A, the dew-point temperature is found to be 53.4 deg.

the departments where the conditions are equivalent to those required for human comfort, no heat is needed in the summer and in the winter there usually is enough heat present in the plant to bring the air from the dew-point temperature to the temperature necessary to give the proper relative humidity.

After leaving the steam coils, the air passes through "no-draft" ducts with one or two outlets per bay to the various points in the room being conditioned. These ducts have a larger cross-sectional area than the blower outlet so as not to restrict the flow of air, and they usually extend across the center of the room to provide even distribution. Ceiling ducts are used so that the cool conditioned air will settle by virtue of its greater density and give proper distribution from floor to ceiling.

Ten Conditioning Units

American Chicle uses ten different units for conditioning air, four of which do not use sprays for humidifying and dehumidifying, and the one of which has an oil filter. Numbers 1, 2, 3, 4 and 5 are humidifier-dehumidifier units serving, respectively, the conditioning, breaking, standard wrapping, coating, miscellaneous wrapping and polishing departments. No. 5 is a double-duty unit with two fans, and it supplies conditioned air both to the miscellaneous wrapping department and the polishing department. No. 6 and No. 7, which serve the coating pans, consist only of blowers and heating coils, the humidifying-dehumidifying elements being omitted to good purpose. While the air for the coating pans needs to be conditioned both for temperature and humidity, satisfactory conditions can be obtained merely by taking conditioned air from the miscellaneous wrapping department for unit No. 6 and from unit No. 4 for unit No. 7, heating it to bring it to the proper temperature and permitting the humidity to drop along the psychrometric curve to the corresponding percentage. This double use of the conditioned air effects worth-while economy.

Units 8 and 9 both consist only of heating coils and fans. No. 8 supplies air to the chicle drying room, while No. 9 provides circulation in the sen-sen drying room. In the latter case, there is no need for accurate control, so control apparatus was omitted. The room happens to have a capacity of only about 1,000 cu.ft., and a fan driven by a ¼-hp. motor handles it successfully.

No. 10 unit does a more complete job of air-conditioning than any of the other units, for it not only controls temperature and humidity but cleanses the air by passing it through an oil filter. This filter, placed at the intake end of the unit, comprises replaceable panels of oil-coated steel wool.

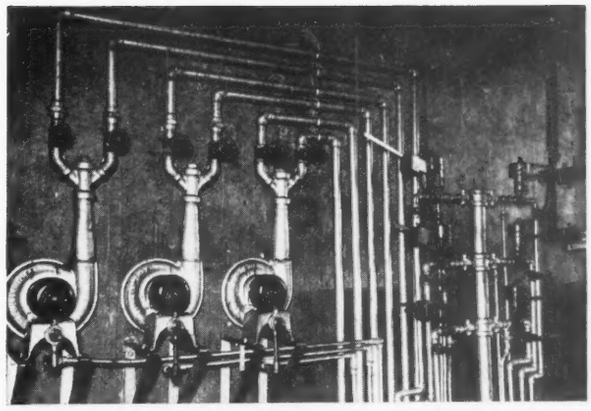
The humidifying - dehumidifying units have capacities ranging from 5,000 to 20,000 cu.ft. per minute. To take an example, the one serving the chewing-gum-conditioning room,

(Turn to page 562)

Premixed Fuel Cuts Smoking Costs 10%

And effects savings in shrinkage and time

By E. S. HURD
Production Manager and Research Director
Stahl-Meyer, Inc., Brooklyn, N. Y.

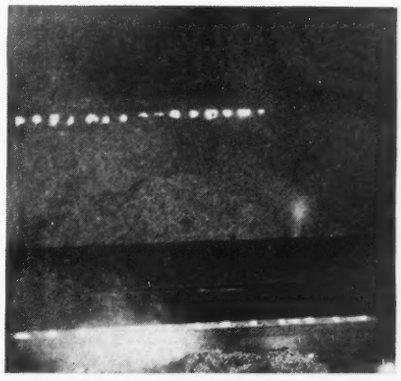


Battery of blowers, each of which supplies air to two burners in one smokehouse. At the right are gas-supply lines with automatic temperature regulators. The air and gas come together in a mixing chamber and then pass to the burners of the type shown below.

BY PREMIXING the air and gas supplied to the twelve smokehouses in its Brooklyn, New York, plant, Stahl-Meyer, Inc., has increased the fuel-burning efficiency from 10 to 15 per cent. By maintaining forced circulation in the houses, the company has effected an appreciable reduction in drying and smoking time and brought about a noticeable curtailment in shrinkage of the meat. And by utilizing automatic temperature control together with accurate timing of the smoking period, the Brooklyn packers obtained the maximum in quality and uniformity of product. This close control also helps curtail shrinkage.

The premixing of the fuel and the forced circulation in the smokehouses both are accomplished by the same equipment: small pressure blowers which deliver air to the gas burners. Immediately before entering the burners, the air passes through a small mixing chamber in the supply line, where it strikes and diffuses with gas admitted through thermostatically controlled valves at the pressure existing in the city mains. Supplied with plenty of oxygen, the fuel burns efficiently as it emerges from the jets on the long, pipe-type burners over the sawdust pit in the bottom of the smokehouse.

The quantity of gas supplied to the burners varies with the temperature in the smokehouse, the thermostat keeping close control over the fuel. But the volume of air passing through the burners remains constant. Though the fuel be completely cut off except for the pilot burners, the air, warmed in passing through the burners, maintains circulation in the smokehouse. This circulation naturally increases the rate at which the meat in the smokehouse is dried. The circulating air, however, is not restricted to that supplied through the burner jets, as that would not be quite adequate to produce the desired drying action. Supplementing the burner outlets are swiveled nozzles on each end of the burner pipes. These may be swung in the arc of a circle to direct the air where it will produce the best circulating effect.



Gas burners and sawdust pit in one of Stahl-Meyer's smokehouses.

The smoke completed, these hams are ready for removal from smokehouse.

Seven blowers serve the twelve smokehouses at Stahl-Meyer. They vary in capacity according to the size of the smokehouse served, but none is very large. Each of the three shown in the accompanying illustration delivers 225 cu.ft. per minute and each serves a three-story smokehouse that has a capacity of 900 hams. The blowers are single-impeller units, driven by ¼-hp., 60-cycle motors which operate at 3,400 r.p.m. on 220 volts, drawing 2.2 amp. Two pipes carry the discharge from each unit, one for each of the two burners in the smokehouse. Hand-operated gate valves permit either pipe to be cut off.

Stahl-Meyer finds that accurate control of time and temperature is the way to get best results in the smokehouse, this assuring the right degree of smoke, keeping shrinkage at a minimum and giving an attractive, uniformly smoked product. Timing, of course, must be by the clock, but the thermostatically controlled valves in the gas-supply lines automatically take care of the temperature in the dozen smokehouses that turn out approximately 100,000 lb. of hams and sausages weekly.

A New Food and Drug Act Looms

WITH a new Food and Drug Act coming up for consideration in the next Congress, it is time for a dumb housewife to make a few comments in behalf of her sister housewives. Although the most interested party to any legislation concerning food, the woman who actually buys these products and uses them to feed her family usually has the least to say about it.

Personally, having spent several months in the government service in Washington during the World War and acquired a first-hand insight into how bureaucracy works in actual practice, my inclination is not toward any great measure of government control of my food supply. As a general rule, however, neither the housewife nor her family have any actual knowledge of the inherent difficulties under which a well-meaning, sincere and honest government labors when it tries its hand at business functions, and "There ought to be a law" has become the popular cry, whatever the ill to be remedied. Not all the glaring mistakes and blunders, not only of our own government but of all the others concerned in the World War, not even the obvious fact that the "planning" of these various governments for improved trade and industrial progress precipitated the senseless catastrophe of that war, have served to warn the theorists at Washington, and the struggling, suffering, or merely thoughtless masses who support them, of the futility of political panaceas.

So we have government planning with us; and it follows that whenever any business seems inclined to wander noticeably from the straight and narrow and so catch the attention of some vocal, crusading, or notoriety-seeking element of our population, it is sure to find itself facing a neat, tight-fitting straitjacket law.

If the food industry is sincere in its professions of desire for, and willingness to, comply with the right kind of pure food laws, its best course is to gain the confidence and cooperation of the housewives of the country. After all, we are not only buyers of food but also voters. The advocates of the proposed Food and Drug Act cannot be blamed if they recognize this and go out after our support and our votes. So far as my own rather limited contacts are concerned, we seem inclined to support them.

The statement of the chairman of one woman's organization—"We don't know anything about the subject, but we want to. The proper protection of our food supply is of the utmost importance to all of us and we are going to make a study of it this winter and do everything we can to insure such protection"—seems to be representative of our reaction when we really start thinking about it. Probably the majority of us are, at this stage, open-minded on the subject, ready to listen to both sides. But if enough of us do make up our minds and start writing our congressmen in Washington, imagine the result.

What do you manufacturers offer us in the way of information? Silly advertisements, keyed to the mentality of a ten-year-old child, won't enlighten us. A few odd tea cups and saucers in our cereal packages won't help. Recipes and cook books don't prove anything as to the cleanliness and wholesomeness of your product, even if the suggested concoctions do turn out especially palatable. We want to know the facts about your food products; about the raw materials used, their processing; the sanitary conditions existing in your plants. The old farmer who refuses to eat canned goods, because he says only byproducts are canned, is an extreme example of the prevalence of misinformation.

We want to know whether you have eliminated the causes for complaint which led up to the old Food and Drug Act. For example, one woman says: "The first thing I look for when I buy canned food is whether a preservative has been used." Another remarked: "I was surprised to find directions in the package of codfish I opened the other day for removing the boric acid. Well, I couldn't feel sure, even after I followed the directions, that I was not eating boric acid with my fish. It may be harmless, but I don't want boric acid in my food." Still another says: "I always look on the labels for statements about artificial coloring. Yes, I know it is probably harmless, but I can't reconcile myself to feeding it to my children."

Then there is the whole subject of the actual food value of your product—your claims for "energy" production, for the various vitamins, desirable minerals, better digestibility, lack of nerve- and sleep-disturbing elements and general healthfulness. How much is truth and how much advertising bunk? Are you thinking of your product as something to eat or to sell?

We are vitally interested in all the discoveries of the food chemist in university and medical laboratories, in your own industrial laboratories. We do not read, and possibly would not understand, the technical articles written for professional and trade papers. Individually, we have not the time to make adequate studies of these things. The women who belong to clubs are trying more or less efficiently to learn what it is all about—often to the accompaniment of your laughter and sarcasm. For popular exposition we have to depend on the women's magazines, seldom knowing whether we are reading the disguised publicity of your advertising department or the sincere gropings of the literary-minded staff of the magazine into the mazes of chemistry and industry.

The medical profession, while it raves in private at the quackery of the drug industry and the charlatanry of the cosmetic trade, has given immeasurable comfort and aid to both of them by its code of ethics which imposes a gag of public silence on the individual physician. Admirable in

If manufacturers will tell women what they need to know about processed and packaged foods, they will have advocates before Congress—not denouncers

. . . And the Dumb Housewife Wants to Know . . .

its aim to avoid self-exploitation by the physician and dangerous self-diagnosis and medication by the patient, with no doubt some idea toward not cutting down the doctor's income, it has sent the poor man to the quack and to advertised remedies. Its high-hat attitude toward the very human desire for beauty is both unjustified and to be blamed for much of the quackery, unreasonable profits and swindling of the cosmetic industry.

No code of ethics, so far as I know, prevents the food industry, individually or collectively, from telling the housewife all about itself. It might just as well, because its friends in Washington are going to anyway.

If there is anything about the constituents, the processing, the distribution of your product, or your claims for its food value, that will not stand the white light of publicity, it is your move to produce the facts to justify its existence or eliminate it.

The baking industry probably will have to explain why its products taste so differently from those "Mother used to make," and justify the use of the many substitutes for the old fundamental ingredients home cooks have always used. This might enlighten the baker, as well as the consumer, as to why his bread is either a soggy mass of tasteless white stuff, or a dry and equally tasteless puff, composed mainly of the maximum number of air pockets.

Should Price Be Stressed?

Whether the baker would be producing a better product if he had been less nagged and pestered by the government as to the price to the consumer is a subject which may deserve serious thought. Chain-store competition probably has done more toward keeping the price down than government nagging; but how much this harping on price has had to do with the adoption of cheaper ingredients, substitutes, and the endeavor to sell the ultimate quantity of water, or the most puffed up and largest appearing loaf for the money, might make an enlightening subject of study for the advocates of more government in business. During all the pother, there does not seem to have been much attention paid to quality or to the existence of dirty cellar bakeries.

For two reasons, too much government interference, too stringent laws, are not so good, either for the manufacturer or the consumer. Excessive regulation not only tends to discourage voluntary improvement and enterprise but encourages clever evasions of the law or, at best, adherence to the letter rather than the spirit. Every mother knows too strict rules and too much planning of Johnny's work and play make Johnny either a sissy or a sullen, discontented boy, if not a cunning, lying, little sneak. Tell him how bad he is often enough and he will believe you and try to live up to your opinion of him. And human nature does not change fundamentally with the addition of a few years of living in this chaotic world.

Laws May Hamper

Then laws may be so stringent, or out of sympathy with the industry, as to hamper the manufacturer in serving the real needs of the consumer. We are in a period of transition from living more directly off the soil and old and crude methods of preserving perishable and out-of-season foods to an even greater dependence on scientifically preserved and processed foods. For instance, the development of the quick-freezing process has made possible a preservation of raw food, obviously of good quality and free from adulteration, which may revolutionize the food-preserving industry. Achievements of this sort we most emphatically do not want to see hampered and discouraged.

If you will explain to us why you object to any of the provisions of the proposed act, just how they will affect you in your efforts to serve us, allowing a stimulating profit to yourself, possibly we can help. Take the labeling of packages—I don't believe the average woman cares a "tinker's dam" about a long list of the ingredients contained, say, in an attractive package of tasty cereal. Such a list of old, familiar foods would more likely take all the joy out of trying something new and—she had hoped—different. But she may need desperately to know the relative quantities of starch, protein, sugar, fat—and perhaps the kind of fat, whether vegetable or animal—which the product contains, so that she can serve the proper additional food to provide a well-balanced diet for her family.

What Are Food Values?

If the manufacturers think women do not analyze the food they serve, in this way, they do not know their customers. Scientific diet for children is an established practice, even in surprisingly humble and uneducated families. Diet—and not diet fads—is becoming more widely recognized as of more importance in the treatment of human ills than drugs. The individual who "can eat anything" is rapidly disappearing along with our pioneering, active, out-of-door way of living. Hundreds of thousands of diabetics must eat food with reduced starch and sugar content, and at least one specialist is successfully treating arthritis with a similar and only slightly less rigorous diet. Well-considered, if not exactly special, diets are becoming the rule and not the exception. It is important that the food manufacturer recognize this and help the housewife select and prepare the proper food for the various members of her family—without excessive labor on her part or too much strain on her pocketbook.

We owe too much to the food industry to see it unfairly punished. If you will give us some common-sense reasons why the proposed legislation is too stringent or unfair; if you will tell us frankly all these things we want to know about our food, I believe you will find all your dumb housewife customers will become your advocates before Congress rather than your denouncers.

Reviving a Famous Beer

• Making and marketing a product are essential functions to success. How they are performed is of greater moment than who performs them. Yet their carrying out by separate corporate organizations may prove more profitable than to have both performed by a group experienced in but one.

• Canada Dry Ginger Ale, Inc., had no experience in beer making, but knew how to market beverages. It needed an outstanding beer to expand its business, so went on a hunt for a concern that knew how to make the beer, but had no marketing organization.

• Market acceptance of this beer bears witness to the wisdom of the relationship. Canada Dry's distribution is too well known to need further comment.

Copper kettles, tubs, and piping of Shock & Gusmer construction are used throughout the newly equipped brewhouse. The "Grant" and its "underlet" connections provide a means of testing the brew for clarity and freedom from grain particles.

WHEN the J. Chr. G. Hupfel Brewing Corp. turned an attentive ear to the proposal of Canada Dry Ginger Ale, Inc., for a superior type of bottled beer, it had the fundamental beginnings for the making of such a beer.

Its physical assets were the buildings in which to house beer-making equipment and operations, an abundance of refrigerating capacity, and a water supply considered excellent for beer making. Its less tangible, but even more important, assets were a three-generation knowledge, reputation and tradition for making a draft beer second to none; the services of its former brewmaster who had gone to Europe with the coming of prohibition and kept himself so familiar with the latest developments in beer making that he could be depended upon to brew a beer equal to any that might be imported; and no contractual ties to prevent the re-equipping of its brewhouse and stockrooms with the latest type of brewing equipment. As the brewery properties had been used for ice making and other light manufacturing purposes during the prohibition period, they had been kept in a good state of repair and there was no antiquated brewing equipment on hand to interfere with complete modernization of the brewhouse and stockrooms.

Low humidity and 32-33 deg. F. hop-storage conditions are obtained by a York ammonia-flooded cold-air diffuser which sets up an air circulation by drawing in room air from the floor and discharging it with considerable force near the ceiling. Curve in discharge duct directs the current of air to the far end of room.

Bottled beer is not truly a new product with the Hupfel company. As far back as 1884 it had prepared beer in 12-oz. and 1-qt. bottles with cork stoppers and tin-foiled tops. These bottles were branded like European wine bottles, wrapped in rice paper, packed in straw in pine boxes and shipped to Brazil and Cuba. But until 1934 this company never sought seriously to become a brewer of bottled beer; even then it turned its back on the more common methods and set out to produce a bottled beer of the finest type.

To do so several requirements had to be met and specific precautions had to be taken. Listed in general terms, they are: painstakingly selected raw materials, expertly controlled processing operations, fully refrigerated and long-time storing, or aging, and appropriate bottling and labeling. In making plans for the dual business relationship, these specifications were to characterize the beer required by Canada Dry to meet the competition of those breweries who had kept their production and marketing facilities active during the prohibition period.

The brewery management has met the challenge with beer that is free from bitterness, has a satisfying body and mellowness generally found only in the finest of bottled beers, and has a pleasing, clean-cut aroma.

Such results are not obtained unless every step from the selection and

Canada Dry Merges Its Distribution System With Hupfel's Skill in Brewing to Put an Extra Quality Bottled Beer on the Market

preparation of the wort constituents to the bottling of the finished beer is kept under strict control. By choosing the correct proportion of barley malt and a high starch constituent such as grits, the protein content of the wort can be kept within the limits that permit the greater part of the albumins and albuminoids to be coagulated in the brew kettle when the wort is boiled with the hops. The length of time and the manner in which this boiling is done have considerable to do with the completeness with which these heat coagulable proteins are removed with the spent hops and with which the hops are extracted without giving the beer an unpleasant bitterness.

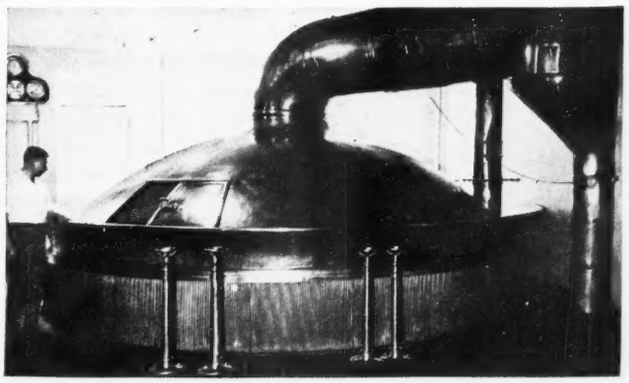
Even the starch-containing grits must be given a short malt treatment and a thorough cooking in the converter or grain cooker to assure gelatinizing of the starch grains before these materials are run into the mash tub to be acted upon by the enzymes of the mash for conversion into fermentable sugars and dextrins.

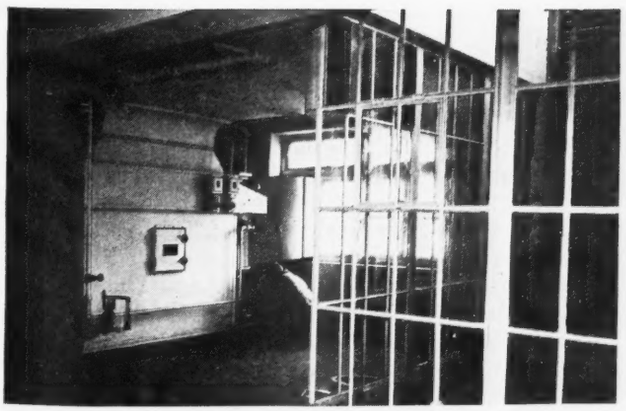
Beers regarded as having a high food value are likely to have higher malt constituents than the thin beers. Consequently, in their making, long aging is considered a particularly important step to assure development of the highly desired qualities of clarity and taste. And, unless this aging is carried out under regulated conditions, undesired results are likely to be obtained.

From the cooling of the wort to the bottling of the beer air-conditioning and refrigeration are essential in modern-day production of good beer. No longer do brewers depend upon underground fermentation and stock cellars to keep their beer cool.

To prepare the wort from which the age-mellowed Hupfel beer is made, refined grits with a small per cent of malt are processed in the 260-bbl. steam-jacketed copper converter through stages of gradually heating until the boiling stage is reached. It is held at boiling for approximately one hour to assure gelatinization of the starch content.

In the meantime all-barley malt with the desired quantity of water at 106 deg. F. to make a thick but lump-free diastatically active mash has been under agitation in the 550-bbl. copper mash tub and undergone a "doughing-in" treatment to get the maximum penetration of water into the malt solids as an aid to later mashing of the cooked grits. At the





While the hot wort is flowing over the Baudelot coolers a Carrier air-conditioning unit forces washed and cooled air into the glass-inclosed room at the rate of 2,000 cu.ft. per minute to sweep the room free from steam and to avoid infecting the beer with wild yeasts and other undesirable microorganisms.

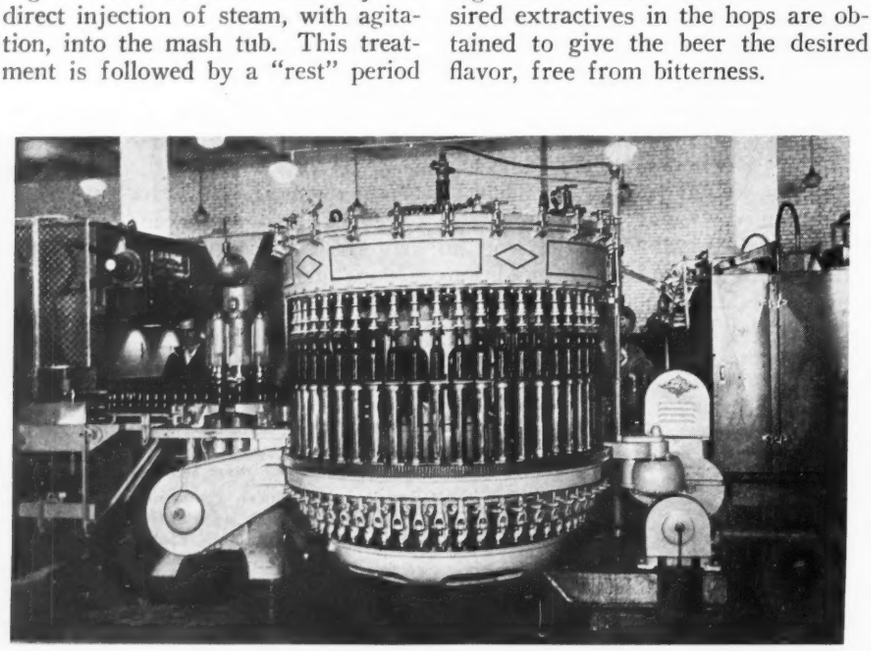
Large batch operations in which turbulent agitation and considerable evaporation are essential make the brew kettle and its steam-removing equipment among the most impressive units used.

Copper piping with brass valves have replaced the traditional rubber hose for transferring beer to and from storage. Note overhead direct-expansion ammonia cooling coils.

end of the boiling period the contents of the converter are pumped by a rotary pump through copper piping into the mash tub at a uniform rate and with continuous agitation. By this method local overheating and injury to the diastatic enzymes in the mash are avoided. As the contents of the converter are added to those of the mash tub the temperature of the mash rises gradualy and the starch content of the cooked grits is changed into maltose, other sugars and dextrins. Toward the end of the mashing period the temperature of the mash is raised to approximately 162 deg. F. for about 30 minutes by the direct injection of steam, with agitation, into the mash tub. This treatment is followed by a "rest" period tub for another passage through the filtering layer of grain residue.

After draining, the residue is sparged with additional hot water to remove as completely as possible all extractive substances from the grain, which is finally disposed of as waste material.

In the 650-bbl. copper brew kettle hops are added to the wort and the mass is uniformly heated to boiling with a percolator type of vigorous agitation. Only fresh young hops containing a high proportion of the imported Bavarian grade are used and the time of boiling of the brew is regulated to assure that all the desired extractives in the hops are obtained to give the beer the desired flavor, free from bitterness.



From the bottle filler and capper the beer passes into a Meyer-Dumore automatic compartmented pasteurizer to be heat-treated in a manner that will kill any residual yeast without causing cloudiness or a noticeable change in flavor of the beer.

of about an hour to get additional extraction of grain solids and to permit the solids to settle.

During the mashing operation, heated water is added to bring the wort content of the mash up to approximately two-thirds the desired volume. Following the "rest" period the wort is drained from the grain solids through the perforated false bottom of the mash tub, which has made unnecessary the lauter tub to separate the mash into its liquid wort and solid waste constituents.

During the draining period the wort is drawn through a copper unit known as a Grant, in which it is tested for clarity and freedom from hulls and grain particles. If clear, it is passed on into the brew kettle. If not, it is pumped back into the mash

While in the brew kettle, usually about 7 hours, the wort is also concentrated through evaporation of water to the desired gravity. It is then separated from the spent hops and run over cooling coils to bring it to 45 deg. F. temperature for pitching with yeast in the fermenters.

Usually the hops and the wort are separated in a unit known as a "hop-jack," but in the Hupfel brewery this separation takes place in a unit specially designed by Adolph G. Hupfel, one of the brewery owners. In effect it is a combined filter and press. The filtering takes place as the contents of the brew kettle flow by gravity into the revolving perforated cylinder which retains the solids and by centifugal action throws the wort into a roomlike compartment from which it is pumped to the Baudelot coolers five floors above. By a screw-press action the end of this revolving cylinder is made to move forward and compress the hops to remove the adhering wort.

As the wort flows over the Baudelot coolers at the rate of 250 bbl. per hour in a glass-inclosed room it is cooled from about 200 to 45 deg. F. in an atmosphere cooled and washed by a Carrier air-conditioning unit. This precaution is taken to avoid infection of the wort by wild yeasts or other microorganisms which would interfere with the regular fermentation and which, during the aging storage, would give rise to off-flavored beer.

Each Baudelot cooler consists of an upper set of coils made of copper through which cooled city water is forced from the bottom to the top coils to cool the wort from about 200 to 70 deg. F. as it flows over their exterior. The lower set of coils is of polished steel and cooled with direct-expansion ammonia to lower the temperature of the wort flowing over them to 45 deg. F.

Iron Causes Cloudy Beer

The cooled wort falls into a copper catch pan under the cooling coils, whence it flows by gravity through copper pipes to steel fermenters. These fermenters are of both the open and the closed types, having a capacity of 560 to 575 bbl. and coated with a protective lining to prevent contact of the wort or young beer with the metal. As little as 1 part of dissolved iron in 500,000 parts of beer is reported to cause cloudiness.

These fermenting tanks are pitched with pure culture yeast as frequently as laboratory tests indicate a change in seed yeast should be made to assure freedom of brew from wild yeast and bacteria.

During fermentation the brew is held very closely to 45 deg. F. by having the room cooled to 40 deg. F. by means of cooling coils through which is pumped ammonia under direct expansion. These coils are so placed on the walls that there is a gravity circulation of air through the fermenting rooms. This arrangement not only gives cooled air but also helps to keep the room free from excess moisture and CO_2 gas, which leaves the fermenting room through vents in the walls near the floor. The fermenters are of steel and without any insulating covering, yet 2-in.

(Turn to page 554)

Why A B C Grades Won't Work As Well as Descriptive Labels

By L. V. BURTON
Editor of Food Industries

● Every food manufacturer has a vital interest in the controversy now raging between N.R.A. and the canning industry. The real underlying issue is whether merchandising by brands or only by compulsory federal grades shall be permitted in the future. The canners are very properly resisting this form of regimentation.

A DECISIVE step was taken on Nov. 9 when the board of directors of the National Canners' Association unanimously adopted the report of its labeling committee. That report calls upon the entire canning industry to utilize the system of descriptive labeling which has recently been developed by the committee, instead of the A B C symbolic system of quality grades on labels which has been so actively advocated by N.R.A. (FOOD INDUSTRIES, October, p. 470; November, p. 517.)

This step is momentous as well as decisive, for it throws down the gauntlet to Armin W. Riley, division administrator of N.R.A. in charge of food codes His handling of the canners' code prior to its approval on May 29, 1934, and particularly his attitude since that date, has amounted to an astounding attempt to coerce the industry. And it has had exactly the result that anybody could have predicted.

A B C Used in Warehousing

Mr. Riley and the Consumer' Advisory Board of N.R.A., as well as Dr. F. C. Howe and the Consumers' Counsel of A.A.A., aided and abetted by the Warehousing Division of the Bureau of Agricultural Economics, have been endeavoring to force the industry to adopt for its consumer labels the symbolic grading—the A B C system—now in use for grading canned foods for the issuance of warehouse receipts

Because Mr. Riley, the Consumers' Advisory Board, and the Consumers' Counsel of A.A.A. possess much less knowledge of the industry and of canned foods than they do of zeal for A B C grades, they have succeeded in placing the canners in a false position and have made them seem to appear to have sinister motives, and apparently to desire to withhold from consumers the true facts regarding the quality of their products.

Yet when the canners, who know the limitations of the A B C grading proposal, brought forth a workable method that is more effective for informative labeling, both Mr. Riley and the Consumers' Advisory Board have publicly criticized the canners (see *Advertising and Selling,* Oct. 11, 1934, p. 23, and also *Industrial Standardization and Commercial Standards Monthly,* November, 1934, p. 243, and innumerable press releases). All of this criticism is presumed by the canners to be a part of the pleasures of partnership of the government with business.

Reid Murdoch's new ripe olive label applies the philosophy of descriptive labels to one of the less complex problems.

What's the Row All About?

All industries, food or otherwise, should be thoroughly familiar with the controversy because it happens that canned foods are the first to be selected for attempted compulsory A B C grading. Basically, the fight is whether manufacturers can sell by brands or by grades. But we shall omit any discussion of the merits of that point other than to direct attention to the fact that the consumer groups employed by the government seem to be determined to eliminate brands from all merchandising of consumer goods.

The question confronting the members of the canning industry is whether it is possible to grade the products of an industry by the A B C system. Mr. Riley thinks it is possible. The canners think otherwise, and the directors of the National Canners' Association therefore voted unanimously in favor of descriptive labeling.

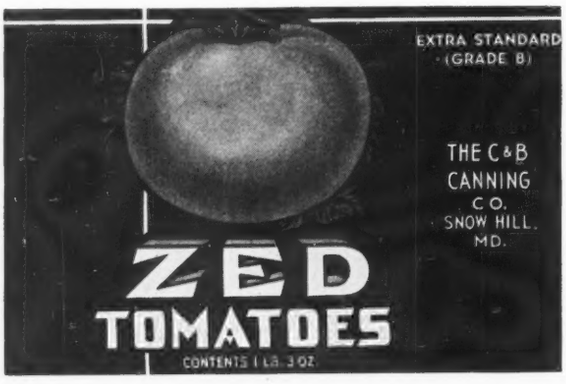
From the purely technical standpoint, an A B C system is impossible because flavor cannot be measured. The Bureau of Agricultural Economics says it is rewriting its own grade definitions in such a way that the flavor factor is omitted. But skeptics wonder what a grade would mean if flavor were left out and ask why, if flavor is a non-essential, should the population of this country desire to eat anything but cornmeal mush and milk.

What Mr. Riley and the consumer group overlook is that anything printed on the label is subject to the jurisdiction of a criminal statute known as the Food and Drug Law. Failing to understand this point, they call attention to the fact that some canners use the Bureau of Agricul-

tural Economics system of A B C grades on warehouse receipts, but do not recollect or know that the question of the quality-grade here is not subject to enforcement by a criminal law, but only by civil law. In the latter case definitions do not need to be drawn up with great exactitude.

They also point out the Canadian 16-year-long experience with compulsory grades on canned foods called Fancy, Choice, and Standard. But they fail to take into account that the Canadian law has not been enforced as a criminal law.

When there have been cases of misbranding in Canada, the trade reports that the method of enforcing the Canadian law permits the goods to be relabeled without going through a court action. And C. S. McGillivray, chief canning inspector for Canada, is authority for the statement that they never have needed a lawsuit.



A, B, C labels may be used today. Any canner who desires may use grade labeling under the present law. A few are using it now. This company and label came into being in 1933 and is taking advantage of the permissive status of the present laws, but is subject to the jurisdiction of a criminal statute.

Procedure under the Canadian Meat and Canned Food Act is very informal compared with the United States procedure under the Food and Drugs Act of 1906.

Another essential point of difference between Canada and the United States is that the Dominion Department of Agriculture can and will approve of a label—something that the U. S. Food and Drug Administration will not do.

One point should be made clear to all who have any interest in the merits of the controversy. If or when A B C grades may be imposed on the canning industry, it will not put the canners clear out of business. Not one of them has ever made such an assertion. Neither are there any canners who desire to withhold any information from the public about the contents of their cans. A B C grades are merely unenforceable.

What the quality canners are trying to do is to let the world know, as clearly as it is possible to tell it, just what sort of food is in a can and yet continue to maintain the same high standards of quality on which they have built their present respective reputations.

However, to define a quality grade it is necessary to set up an arbitrary system of limits, and this involves a problem like determining when night begins. We know when it is light and when it is dark. One condition merges imperceptibly into the other. But who would like to have the job of telling the exact instant at which night begins if a difference of opinion on that point meant a judicial trial for violation of a criminal law?

At the outset of the long controversy, Mr. Riley first wanted to make a pea canner, for example, tell the story on his label by a single symbol such as grade "B." But after becoming more aware of the complexity of the problem, he declared he wanted the grade "B" *plus a descriptive label.* In effect he has said that this is what he had wanted right from the start, despite his previous statement to the contrary.

Canners, desirous of giving the fullest specifications on the label, balk at lumping the whole mass of data together as a single symbol because it does not tell the whole truth, is not fair to canner and farmer, and actually may mislead the consumer because it is based on a scoring system.

Consumer groups, however, demand the symbol on the label without realizing what it will involve if it is imposed. Surely Mr. Riley must know what it means to have a federal system of compulsory grades. If he does not, he is wholly unqualified for his job. For the benefit of those who may be less informed on this subject than Mr. Riley, it should be explained that a federal grade must represent the same quality in all parts of the country. It happens that there are some regions that are more favored by nature than others for the production of the best quality of raw materials. Yet the less favored regions have produced for their trade qualities that are considered to be "good," "better," and "best." In some years, if goods representing the "good," "better" and "best" of one region are placed beside the "good," "better" and "best" of a more favored region of the country, it may be discovered that they are not always of equivalent desirability. The "better" of one region may be only the equivalent of the "good" of another region. But under Mr. Riley's interpretation of the New Deal, this sort of commercial anomaly must not be allowed to exist. A nation-wide system of grades must be set up which will be rigid. It will require an absolute, in contrast to a relative, system of quality grades.

The question then becomes one of where to draw the lines of demarcation between grades A, B and C. Shall it be made as high as the boys in the more favored localities desire to see it? If that is done, the canners in certain other less favored regions may be excluded from grade A and possibly grade B, save in exceptional years. Will their Representatives and Senators sit idly by and see their constituents excluded from their former places in the markets of trade? Or will the Congressional representatives demand the fixation of the federal grade definitions at a lower level where grades A, B and C can be attainable in any year?

Quality Will Be Lowered

But if that is done, let us consider what the canner in the more favored part of the country will be forced to do. Good-quality raw materials cost more money than lower qualities. If the farmer is not paid a premium for the better qualities, it is generally to his advantage to allow the crop to grow to a greater maturity. Then the crop will weigh more and the farmer makes more money than he would if it were harvested young—assuming that there is a fixed unit price. If the canner gets an A grade, based on a low federal definition of what the letter A is to mean, then the letter A on his goods will not mean a bit more to the consumer than the letter A on the label of another canner. And the consumer will not pay

(Turn to page 554)

TRUCK RAIL COORDINATION

In the truck-rail system of the Merchants Despatch, Inc., two complete 2,000-gal. tank semi-trailers are mounted on turntables on the flat car and removed by a motor tractor as shown. The first experimental operation was begun on Nov. 12 last with a movement of milk from the plant of the Dairymen's League, Inc., at Fort Plain, N. Y., to New York City.

IF THE automotive editor of this magazine correctly interprets public opinion, there is a widespread agreement among business concerns, included in which are those companies engaged in the food industries, that further truck-rail coordination is desirable and will result in a reduction in distribution costs.

Two of the most recent developments along such lines are pictured graphically on this page. At the center and bottom are shown details of a through transportation system for a proposed nation-wide terminals company operating in all major competitive terminal areas. It is the design of William P. Kellett for Thomas A. Bradley, in conjunction with the Acme Fast Freight, Inc., 88 Lexington Ave., New York City.

The system includes a great variety of removable unit bodies, with two or more units carried on one railroad flat car, for such food products as live poultry; livestock; refrigerated foods; and tanks for fluid milk, syrups, etc.

In the system of the Merchants Despatch, Inc., 25 North St., Rochester, N. Y., shown at the top of the page for fluid milk hauls, two complete semi-trailer milk tanks are carried on a flat car for high-speed passenger-train service.

Box body suitable for cases of milk or other food products being unloaded sideways onto specially constructed Autocar tractor and semi-trailer by power from the tractor engine.

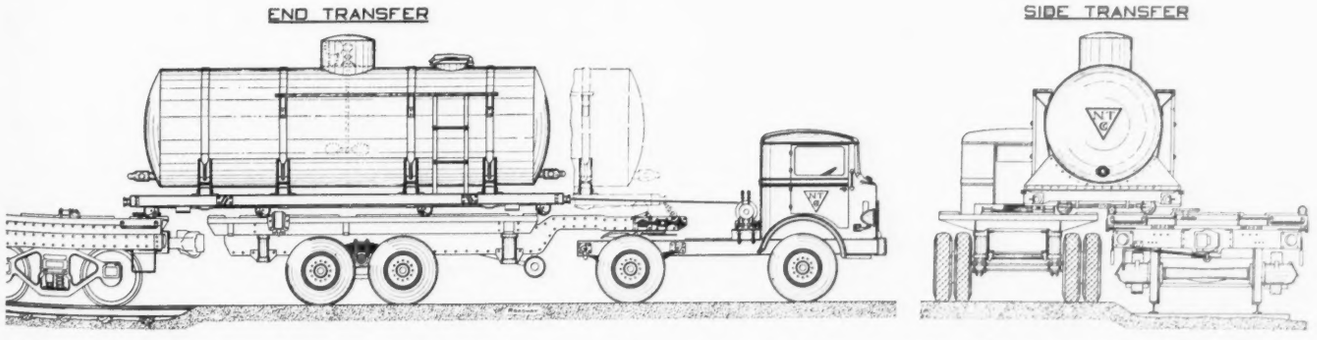
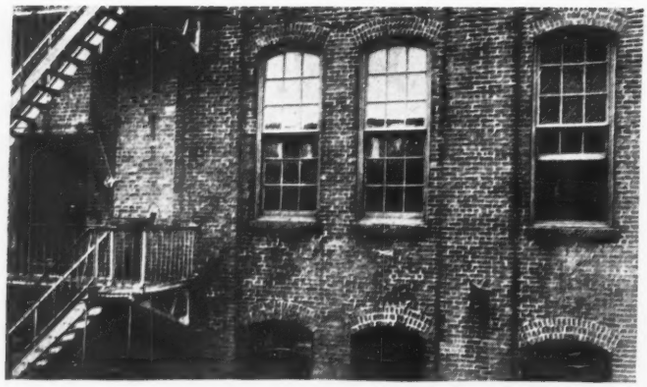


Diagram of the end and sideways method of transferring demountable milk or syrup tanks from a railroad flat car to a motor truck or tractor semi-trailer in the system designed by William P. Kellett in conjunction with Acme Fast Freight, Inc.



Even old-fashioned windows can help to vent explosions if their panes are diagonally scratched with a diamond to aid breakage.

Large areas of glass assisted in venting this explosion, the swinging sash probably reducing damage to window frames. With rigid sash, use lightweight glass for quick venting and sash protection.

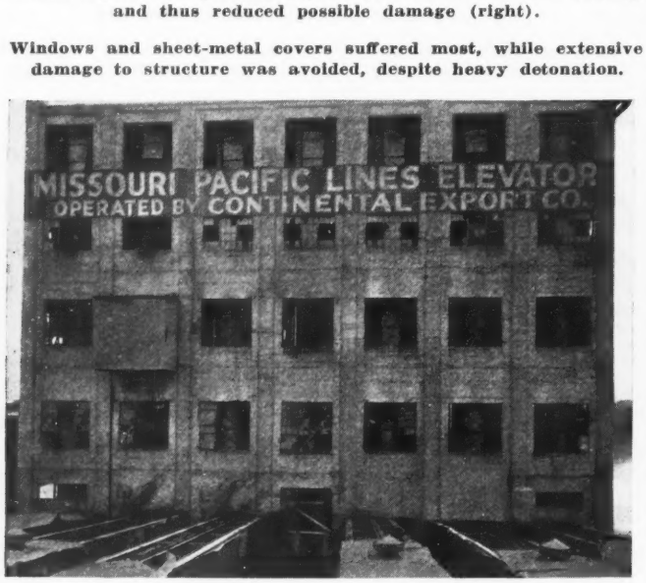
Death... Damages... Destruction...

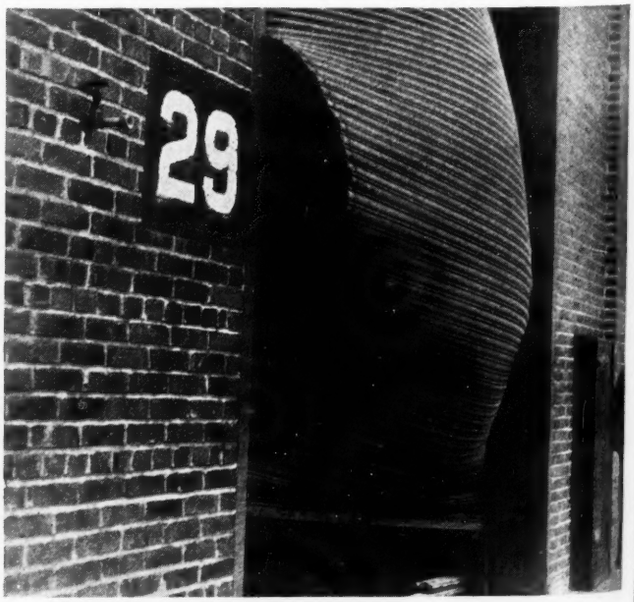
DUST EXPLOSIONS are a constant threat of loss in all food plants where combustible dusts are formed, and eternal vigilance is the price of freedom from such catastrophes as are pictured on these pages.

SIX MONTHS' TOLL of explosions in food plants points the necessity of thorough dust collection and removal, avoidance of ignition, adequate venting to minimize damage, and isolation of hazardous operations.

In this explosion, a yielding type of door closure aided in venting and thus reduced possible damage (right).

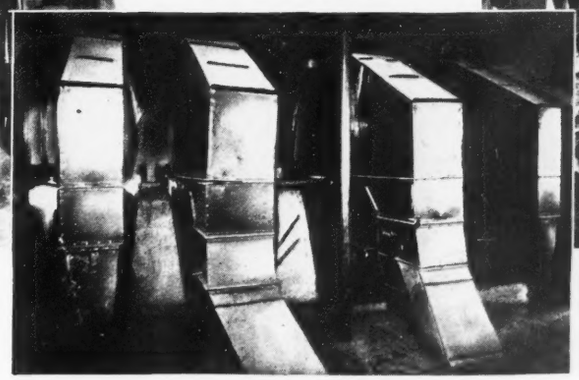
Windows and sheet-metal covers suffered most, while extensive damage to structure was avoided, despite heavy detonation.





Vents pay for themselves, as indicated here, where complete rebuilding of unvented elevator on the left was necessary, while vented elevator on right escaped major damage.

Equipment remote from explosion may suffer as did these elevator heads, which were bulged by a dust explosion.

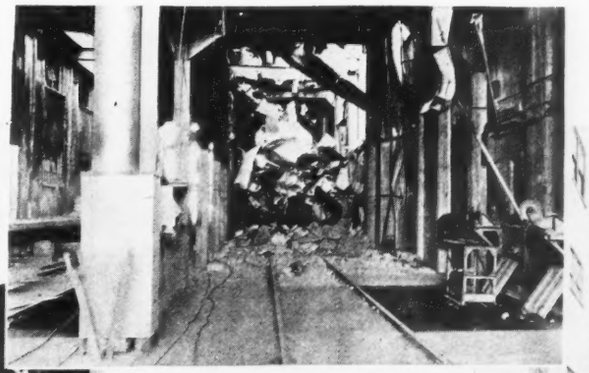


Swinging sash afforded some protection on this floor when heavy explosion in unvented bins below did extensive damage. Venting the bins would have reduced the loss.

TEN SERIOUS DUST EXPLOSIONS in less than six months in the food plants of the United States demand attention to this type of hazard. No plant in which combustible dust is formed can be considered wholly free from this kind of risk.

Date	Location	Cause	Dead	Injured	Property Damage
Jan. 24	Wm. E. Kreiner & Sons, Buffalo, N. Y. Secondary explosion during fire fighting did most damage.	Malt dust	2	14	$79,000
March 13	Wichita Mill & Elevator Co. (General Mills, Inc.), Wichita Falls, Texas. Explosion in equipment between main buildings limited by segregation of unit operations.	Corn dust	1	4	192,000
April 20	Central Grain Elevator Co., Amarillo, Texas. Choke caused by foreign object when released gave both dust and frictional ignition.	Wheat dust	0	3	75,000
April 26	Arcady Farms Milling Co., Riverdale, Ill. Foreign object gave spark ignition in grinding equipment.	Feed dust	0	0	300,000
May 8	Missouri Pacific R.R., St. Louis, Mo. Large venting areas probably saved excessive structural damage.	Corn dust	7	8	125,000
June 8	General Mills, Inc., Minneapolis, Minn. Bad extension cord connection to safety lamp separated, with arc causing ignition.	Flour	0	2	10,000
June 12	Kurth Malting Co., Milwaukee, Wis. Explosion during fire fighting; fire the primary cause.	Malt dust	0	0	35,000
June 19	Ralston Purina Co., Nashville, Tenn. Either foreign material gave a spark or friction contact in leg of elevator.	Oat dust	0	0	10,000
June 22	Farmers' Cooperative Elevator, Tracy, Minn. Foreign material in grinder possible cause.	Feed dust	0	4	None
July 12	Warfield Chocolate Co., Chicago, Ill. Previous fire spread to cooler; explosion when operation resumed.	Cocoa dust	3	3	15,000

Flame was not present for ignition in this grain dryer, which was being used for a cooler. Note that limited venting areas caused damage to the body of the main structure itself.



With all outdoors available, this corn-dust explosion caused extensive damage, but, being segregated, did not spread to adjoining buildings.

Segregated operation limited this blast, which was confined to the transfer equipment, as the operation in process did not let explosion into either adjoining structure.

RATS and Mice

Traps, or poison, and constant vigilance are needed to keep these pests out of the food plant.

By HARRY STINER
Los Angeles, Calif.

ESTIMATES by experts of the loss caused by rodents in the United States each year are from two billion to four billion dollars, of which over $500,000,000 is for foodstuffs alone. This would appear —at first thought—to be a rather indefinite estimate, but when we consider the universal distribution of these pests, and that the amount of their depredations at any one place is usually comparatively small, accurate figures would seem difficult to obtain. The most regrettable feature of this gigantic loss is that the greater part of it is not necessary. Rodents will not thrive without protection and they cannot live without food and water, but they most certainly do not believe in birth control when these three favors are forced upon them.

For control work in food plants rodents may be divided into two groups: i.e., mice and rats. The ordinary varieties of domesticated mice and rats are more or less common to all plants. While they may migrate at times in search of better conditions, they are essentially man-protected animals and are almost invariably found within some man-made structure. In many localities, especially those bordering on fields or open places, plants often become infested with so-called field rodents. These are of both mouse and rat forms, but are mostly ground-burrowing animals and generally prefer an outdoor existence. Their attacks are mostly during fall and winter months, when food and temperature within the plants offer more favorable conditions. However, the activities of both types are so similar when encountered within a food plant that the same general control methods may be relied upon for either.

Rodents Are Pest Bearers

To detail all of the damages rodents are capable of would be impossible in this article. They eat, gnaw, soil and waste the foods they can reach; they burrow through and beneath the buildings; and, what is even more repugnant, they usually are infested with pests themselves and bear diseases that man may catch. In any case, their ravages are always evident to plant employees and form a blot on the plant's sanitary standards.

There are three general methods in common use for the control of rodents in food plants: trapping, poisoning and ratproofing.

TRAPPING is the most usual method employed in the control of mice and rats. With the fairly recent introduction of more efficient rat poisons, however, the use of traps has diminished somewhat. Trapping usually is accomplished by one of two general methods: by the use of a sticky compound which entangles the animals, or by some form of mechanical device which detains them.

The sticky compounds are similar in effect to ordinary fly paper. They are either spread by the operator on various objects he may choose or they may be purchased already applied to boards or heavy paper. The treated plates are merely laid about where it is thought the rodents will get on them and other things will not. This ideal is not always obtained. However, this method, when properly applied and cared for, sometimes produces almost phenomenal results. An attractive bait is often placed in the center of the compound. This might be of some influence on mice but could hardly be expected to beguile a rat.

As a rule, mice do not object to a somewhat soiled trap nor to odors derived from handling, but they often display a preference for certain kinds of bait. Rats, on the other hand, are very sensitive to foreign odors or unusual conditions and, while their range of foods may be as large as—or larger than—that of mice, their instinctive fear of man and his odors appears to give them a keener judgment as to when an unusual condition exists; therefore the greatest care must always be exercised in handling the traps and baits for rats. Rat traps should be thoroughly scalded or steamed after each rat is caught and should always be handled with gloves (preferably a pair of cotton ones, used only for the purpose and stored with the spare traps). The baits should be as free as possible of foreign odors and handled only with freshly washed hands. Traps for either mice or rats should be set in places which the rodents frequent—behind some object when possible—and never molested as long as the baits are in good condition. Both types of rodents customarily travel from one place to another in more or less established paths. It is often possible to place the open spring-type trap unbaited across these runways and obtain results when baited traps would fail.

Steady Trapping Needed

Trapping, to be successful, must be continuous. That is, a definite place should be given for each trap and it should remain there unmolested until either an animal is caught or the bait is taken or becomes worthless. Especially is this true with rats. They will often pass by a clean, freshly baited trap for several days or until it appears to have become a permanent part of the scenery; then, if it has not been moved or handled, they will try to take the bait. All traps should be checked each morning for possible catches. A rat in a trap if left for long will often put that particular trap and its territory on the suspicious list for many days following.

The most satisfactory all-around trap for either mice or rats is the "guillotine" trap. It consists of a plain, flat piece of wood or steel with a trigger and spring arrangement on

the top side. On wood floors or in dry places the wooden types usually are preferable. For masonry floors or in wet places those with steel bases not only seem appropriate but have a much smaller tendency to collect moisture and odors. These traps are made in both mouse and rat sizes, are reasonable in cost, and are available in all localities.

The type of bait best suited for traps is a problem which must be determined for each plant The fact that a plant may be infested with rodents does not necessarily indicate that the foodstuffs carried in or used in that plant are as attractive to the pests as are many others from outside. The object of trapping is to catch as many rodents as possible, and perhaps no other one feature is more important than the bait. Rodents all must eat and drink, but very few of them are going deliberately to take the bait from a strange contraption when it is no manufacturer. This method, when properly carried out, is no easier nor more simple than trapping, but, as it usually produces a certain amount of success regardless of the care given, it is often used in places where nothing would be done otherwise.

Success with poisonel baits depends not only upon the kind of bait used, the odor and taste of the poison, and the preliminary unpoisoned baiting that is necessary but on how long and how carefully all other possible foods are removed or covered before the poisoning is started. Also, even more caution should be observed in handling and distributing the baits than is necessary in trapping.

A poisoning campaign should begin with prebaiting. These baits should be made separately of several different kinds of foods. They should be of the same materials intended to be used throughout the campaign, and mixed and distributed in the same manner, but without the poison. The bait materials most favored in these tests should then be chosen for the final baiting. This prebaiting should be carried on in moderate quantity for two or three days, then all uneaten baits should be collected. After an interval of three or four days, during which every effort is made to remove or cover all other foodstuffs in the plant, a quantity of poisoned bait—two or three times what the existing supply of rodents can eat—should be made up and distributed throughout the building, in the evening.

One large poisoned baiting in a campaign will often reduce the infestation in a ratproof building to a point where they will not again bother. In more open structures it may be necessary to repeat the poisoning at intervals of one week for some time; even until the outside supply is exhausted or, better, until the building is made ratproof.

Rat poisons usually are referred to as poisoned baits—foods—and a large percentage now in use are of this nature. There are, however, liquid poisons which in many instances are even more successful for continued use than the bait types. They are as easy to apply as baits and need less attention while out; also, they do not require the preliminary baiting and cleaning for which the baiting program calls. However, being intended to replace the rodents' water supply, liquid poisons must not be expected to produce results unless all other sources of water and moisture are either covered or removed.

For either poisoned baits or liquid poison, see No. 7 of formulas, on page 144 of FOOD INDUSTRIES, March, 1934.

RATPROOFING is often considered more of a structural feature than one for pest control. It is true that a building that is properly constructed is ratproof, but all builders are not rodent experts nor are they able to foresee the cracks and ruptures that may occur in the building during years of service. Nor can they prevent the constantly accumulating holes of all sizes which are left by later workers as they move things about.

Holes through the sides of a building, or broken panes on ground floors, like this one, must be immediately repaired if rats are to be kept out.

more attractive to them than the other materials lying about. Traps should first be baited with various kinds of food, then those chosen which are the most successful. Pieces of singed cheese or bacon are generally acceptable to mice, and fresh vegetables, meats, tallow or fish are common baits for rats.

POISONING rodents in one way or another is gaining in effectiveness as new and more practical poisons are developed. However, it must always be borne in mind that poisons must not be used around places where food is manufactured or stored. Most States already have laws forbidding this practice. This restricts poisoning as a method considerably for the food

Rats Destroy Buildings

Not only is a building a helpless victim to natural as well as man-made ruptures but the rodents themselves seem never satisfied with their lot. Those outside are constantly testing every weak spot in the structure for a chance to get in, while those on the inside are trying equally hard to establish outer connections for escape when pursued. They gnaw holes through the loosened sidings, they drill beneath the doors, burrow under the foundation and, in a myriad other ways, attain their end. If sewer traps become broken or dislodged, sewer rats will enter. Hidden plumbing is dug out of the wall to be repaired, but the hole is left open—for the rodents (and they will always find it).

Success of ratproofing in the average food plant means not only repairing the openings that may be found but also continued inspection by those interested and prompt attention to all new holes as they appear.

Savings...50c. Per Ton of Ice

By E. J. TANGERMAN
Associate Editor, Power

• In this, the first of several articles by Mr. Tangerman, covering the possibilities of lowering power costs by the use of gas and oil engines, costs of gas-engine installation and operation are discussed.

POWER BILLS, for power purchased or made at the plant, may be a high spot in your food-processing costs. Unlike other costs, however, that for power may offer a good chance for reduction. Diesel engines or gas engines are worth consideration for their money-saving possibilities.

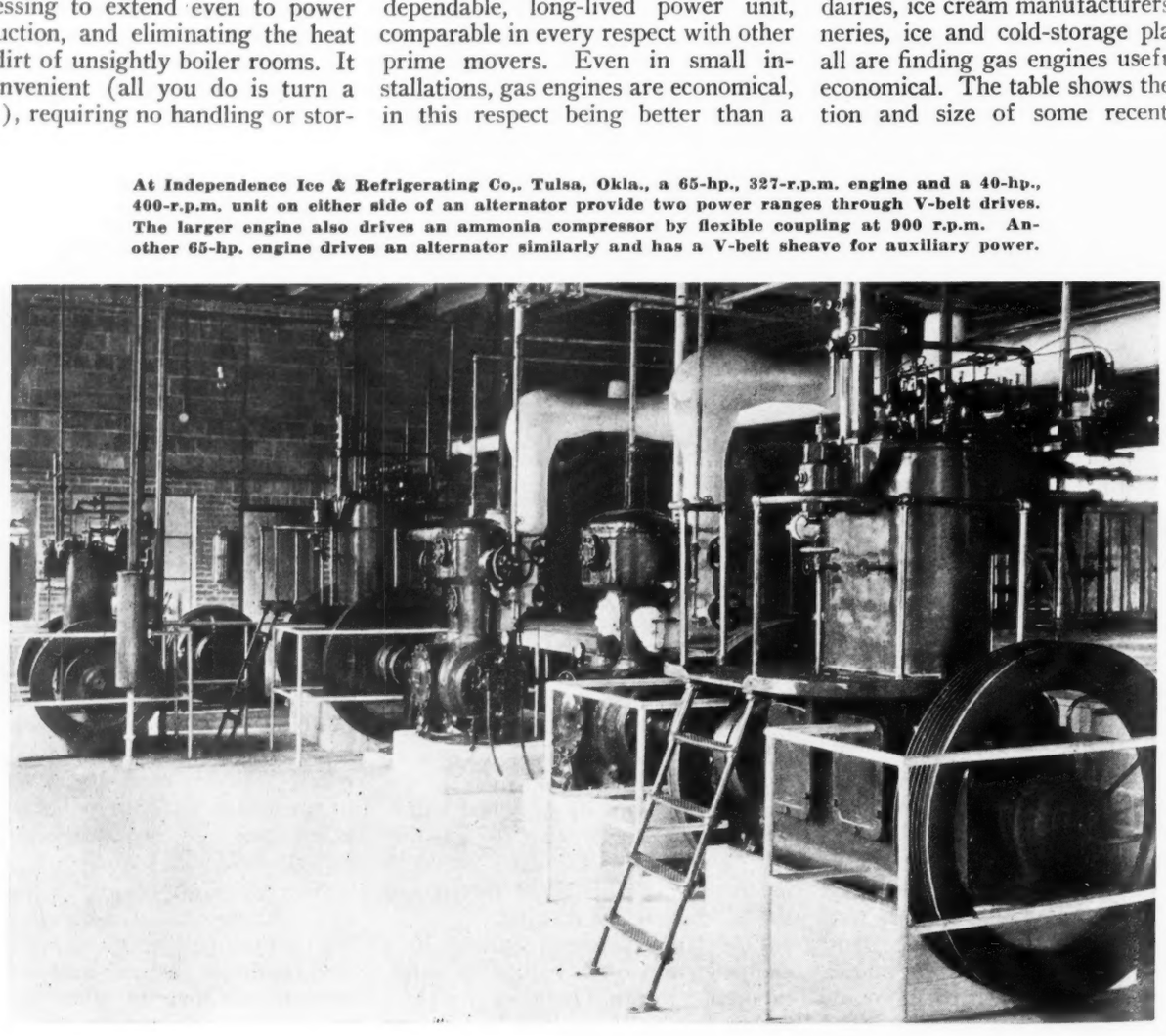
Is your plant near a natural-gas pipe line? If it is, and you are not using gas engines already, it will pay you to investigate. Through much of the South and Southwest, and in certain other sections, natural gas is a cheap and convenient fuel. Pipe lines are spreading, like huge webs, over the entire country.

Why natural gas? It is clean, permitting the "spotless white" of food processing to extend even to power production, and eliminating the heat and dirt of unsightly boiler rooms. It is convenient (all you do is turn a valve), requiring no handling or storage, costing little or nothing when not in use, and flows from a pipe. More important, in these times, it is not paid for until *after* it has been used. These advantages all apply to gas burned under boilers, of course, but we'll talk of gas engines.

The gas engine of today is a sturdy, dependable, long-lived power unit, comparable in every respect with other prime movers. Even in small installations, gas engines are economical, in this respect being better than a steam plant, though not better than diesels. Further, their cost per horsepower installed is lower than for diesels of equal quality, and many engineers have reported their maintenance as lower. If you purchase power, have a short peak season and consequently a high "demand" or "ready-to-serve" charge the year round (as in a cannery), it will pay you to investigate gas-engine power; but remember that depreciation, interest on investment, insurance and similar costs continue right through slack seasons, and may total up to more than the utility demand charges. No generalization will cover—you will need to work out your specific case to find out.

Beverage manufacturers, bottlers, dairies, ice cream manufacturers, canneries, ice and cold-storage plants—all are finding gas engines useful and economical. The table shows the location and size of some recent gas-

At Independence Ice & Refrigerating Co,. Tulsa, Okla., a 65-hp., 327-r.p.m. engine and a 40-hp., 400-r.p.m. unit on either side of an alternator provide two power ranges through V-belt drives. The larger engine also drives an ammonia compressor by flexible coupling at 900 r.p.m. Another 65-hp. engine drives an alternator similarly and has a V-belt sheave for auxiliary power.



GAS ENGINES Provide Economical Source of Power for Beverage, Ice, Ice Cream, Dairy and Other Food Plants

engine installations in the food field.

Ice and cold-storage plants in particular have turned to the gas engine, and the experience in that industry will indicate what the possibilities are for other food plants. In ice making, power costs are a major element in production expense. Several natural-gas-engine plants have reported ice produced at 25c. per ton or less for fuel and lubricating oil (labor and fixed charges bring the total cost up to 60 or 65c. per ton), as compared with 65c. to $1.25 for electrically driven compressors, which, in good condition, take about 60 kw.-hr. per ton of ice.

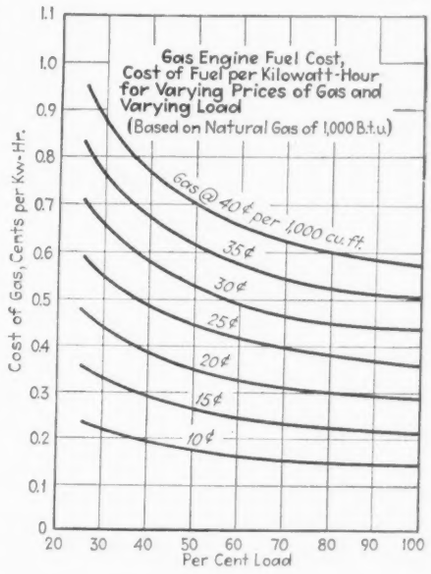
Horlock Ice Industries, Houston, Texas, formerly paid 78c. a ton for purchased power, but reduced costs to 20c. a ton (*operating* cost, not including fixed charges) with natural-gas engines. Many plants, upon installing natural-gas engines, find that attendance on the engines requires no more labor than attendance at a power switchboard, or that one of the workers can handle the engines in addition to his regular duties. This greatly reduces the labor cost of privately generated power and may prove a decided saving, particularly favoring small plants with small power installations requiring little attendance.

Diamond Ice Co. completed a 40-ton ice plant in Dallas, Texas, in May, 1932. Its power equipment consists of two 80-hp. gas engines, driving 8x8-in. ammonia compressors, plus a 56-kva. alternator which can be driven by V-belt from either engine. Operating averages for the first two months with this plant were 863 cu.ft. of gas and 0.7 qt. of lubricating oil per ton of ice. The gas rate for 1,000-B.t.u. gas runs about 25c. a thousand cubic feet. This plant, therefore, had a fuel cost of $0.216 per ton and a lubricating oil cost of $0.016 per ton of ice. The plant is operated 24 hours a day, with labor running at 20c. per ton of ice. In May of last year, manufacturing cost ran $0.621 per ton, being divided thus: $0.219 for fuel, $0.095 for water, $0.017 for lubricating oil (engine and compressor) and $0.292 for labor. No outside power is connected and none has been required so far. This is fairly typical operation for such plants.

Two other recent developments may also enter the natural-gas-engine picture soon. One is the "unibloc" compressor, a combination of engine and compressor on the same frame, with enough power cylinders to drive the compressor cylinders plus as many more power cylinders as may be necessary to drive auxiliaries, a line-shaft, an alternator, or other equipment. Calhoun (Georgia) Ice Co. has installed a unit of this type. The advantage of this construction is avoidance of transmission troubles; smaller, more compact units; better and more economical operaion.

The other development is the convertible gas-diesel engine, with cylinder heads interchangeable in an hour or two, one set carrying fuel-injection valves, the other spark plugs and gas-inlet valves. With this type of engine, you are equipped to obtain most economical operation no matter whether the price differential favors oil or gas. Whichever gives most for your money you can use, and with equal results.

Another possibility worth consideration is the utilization of waste heat. As do all other types of internal-combustion engines, the gas engine wastes much of the heat in the fuel by expelling it in the exhaust gases and losing it to the water in the cylinder jackets. If you have need for a small quantity of process heat, a gas-engine plant may be able to supply it



and thus gain credit for greater economy. The engine at full-load operation will provide a plentiful supply of warm water or warm air (for such uses as drying or heating buildings) or a smaller supply of hotter water, hot air, or even steam. It is possible to obtain as much as a pound of steam at from 60 to 70 lb. per square inch pressure per engine horsepower per hour. This whole matter of waste-heat utilization will be treated more extensively in a later article dealing with diesel engines.

Now for costs. Good gas engines cost about $40 per horsepower (100 hp., $42 per horsepower; 500 hp., $40 per horsepower), and only about $50 a horsepower installed and ready to run. Engine-generator sets with direct-connected exciters, allowing for generator losses, cost about $90 a kilowatt (at the switchboard) installed and ready to run. This is slightly less than diesel-engine costs, and may run still lower if a plentiful supply of good cooling water is available and no very extensive water treatment is required.

Some Recent Gas-Engine Installations

Owner	Location	Service	Hp.	No. Engines
Tulsa Ice Co.	Tulsa, Okla.	Power Plant	240	3
Heights Ice Co.	Houston, Texas	Gen., Comp.	165	1
			65	1
Jaite Co.	Jaite, Ohio	Gen.	130	1
Stephan Ice & Bottling Co.	Bryan, Texas	Comp. and Gen	110	1
			55	1
Service Ice Co.	Paris, Texas	Comp. and Alt.	110	1
Garden City Ice Co.	Garden City, Texas	Comp. and Alt.	90	1
Liebmann's Indep't Ice Co.	Muskogee, Okla.	Comp. and Alt.	90	2
Conroe Ice Co.	Conroe, Texas	Comp. and Alt.	80	1
			65	1
Calhoun Ice Co.	Calhoun, Ga.	Integral Comp.	79	1
Indep't Ice & Refrig. Co.	Tulsa, Okla.	Comp. and Alt.	65	2
			40	1
Fairmount Creamery Co.	Dodge City, Kan.	Comp.	65	1
D. M. Jones	Ardmore, Okla.	Comp. and Alt.	65	2
Pampa Ice Mfg. Co.	Pampa, Texas	Refrig. Comp. and Alt.	65	1
Ada Ice Co.	Ada, Okla.	Comp. and Alt.	65	2
Double Dip Ice Cream Co.	Victoria, Texas	Comp.	55	1
Burden-Smith & Co. (Cold storage and ice)	Macon, Ga.	Alt.	55	1
			40	1

How Standard Brands, Inc., Met

Just how much can be credited entirely to the new package (below) is doubtful. Yet Standard Brands reports a large increase in tea sales since it appeared on the market. Type of seal shown by opened packet on right. The canister at lower right is the container so familiar to tea users.

A NEW AND A BETTER-LOOKING PACKAGE at less than half the cost—a cut in production expense which headed off a rise in retail selling price—gave impetus to a sales campaign that netted 104 per cent increase in sales volume.

WHEN Standard Brands, Inc., cast aside its familiar canister tea package last summer it was not giving indulgence to a fickle whim. The rising costs of supplies and of doing business drove home the realization that costs had to be cut or the selling price of the tea had to be raised.

No master mind was needed to point out the dangers of an appreciable rise in the retail price of a food product which has so many competing commodities as tea. Lower price at the expense of quality of the tea or effectiveness of the package to protect the contents and to please the prospective customer would be equally shortsighted.

In the interest of eliminating unnecessary costs, a package study was made which revealed that the canister could be supplanted by other type containers with at least a 50 per cent saving in container cost without any loss in protection to the tea. And that by adoption of different methods the packaging operations could be speeded up by nearly 100 per cent.

With these savings in prospect before its corporate eyes as a means of offsetting the rising costs, the company looked with favor upon a packaging set-up known in England for the past twenty years but never before tried out in the United States.

Adopts Automatic Packaging

Identified as the Rose Bros. combination machine for tea packaging and labeling, this unit not only weighs the tea into the package but it makes, closes, and labels the packages in a continuous and automatic manner at the rate of seventy to eighty 3½-oz or sixty to sixty-five 7-oz. packages per minute.

The packages produced are of the style generally known as the English tea packet and usually associated with teas imported in packaged form. They may be made from the general run of packaging paper, from parchment paper, or from foil; either plain, paper-backed, or paneled with paper. Also the sealing bands or labels may be all-around or three-fourths around the packet.

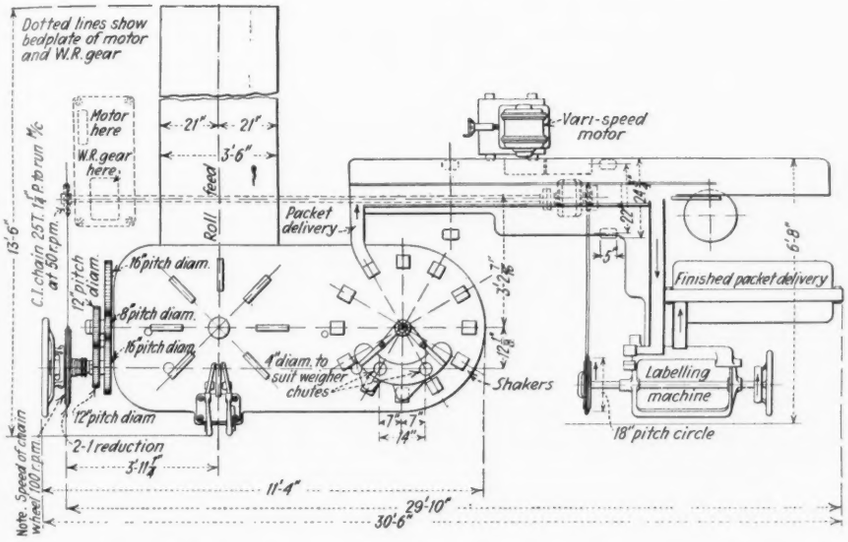
As tea is likely to depreciate in quality through absorption of moisture from the air, it is important that the material from which these packets are made be chosen on the basis of resistance to moisture transfer. A set of laboratory tests showed that tea containers in an open-top, style cardboard carton with a loose paper wrap absorbed 16.8 per cent moisture in four days when subjected to 100 deg. F. air at 95-100 per cent relative humidity; that in packages made with alternate panels of foil and paper it absorbed 8.55 per cent; and that in packages made from all foil, paper-backed, it absorbed slightly less than 2 per cent moisture under these extreme conditions.

The results of these tests are significant in that deterioration in quality of the tea starts after its moisture content exceeds 6 per cent and will reach a moldy state if the moisture content becomes 8 per cent or more. When packed, tea has a moisture content of about 4; sometimes as low as 3 per cent.

On the basis of its moisture-resisting qualities and the familiarity of Standard Brands, Inc., with foil as a wrapping for its small yeast cakes, paper-backed aluminum foil was selected as the material from which the new package should be made.

In the operation of package-forming, the foil is fed automatically into the bag- or packet-making unit from rolls in such a manner that a single-ear fold is made on the bottom with an end cardboard to hold the bag in rectangular shape. The cam-controlled bag-forming unit operates through a horizontal plane and forms eight bags in the course of one full rotation. After forming, the bags are turned through 90 deg. and inserted into pockets or forms in an upright position for filling. As the bag comes into position under the filler an electrical detector actuates the filling unit and causes seven-eighths of the charge to be released in bulk into the scale pan. The remaining one-eighth dribbles in to give an exact weight with a ± 5-grain tolerance. An electric cut-out stops the dribble feed when the correct weight has been reached. In

...et the Challenge of Higher Costs



A typical floor plan layout for Rose Brothers tea and coffee packaging machine as installed by American Machine & Foundry Co.

case no bag is in the pocket, the filling unit is not actuated until a pocket containing a bag does come into position.

To assure a compact package, the filled bag then passes over an adjustable shaker unit which can be set to take care of a variation of as much as 10 per cent in the length of the packet. After shaking, an advertising card or booklet is automatically inserted to give stability to the top end of the bag and permit its closing by a single-ear fold.

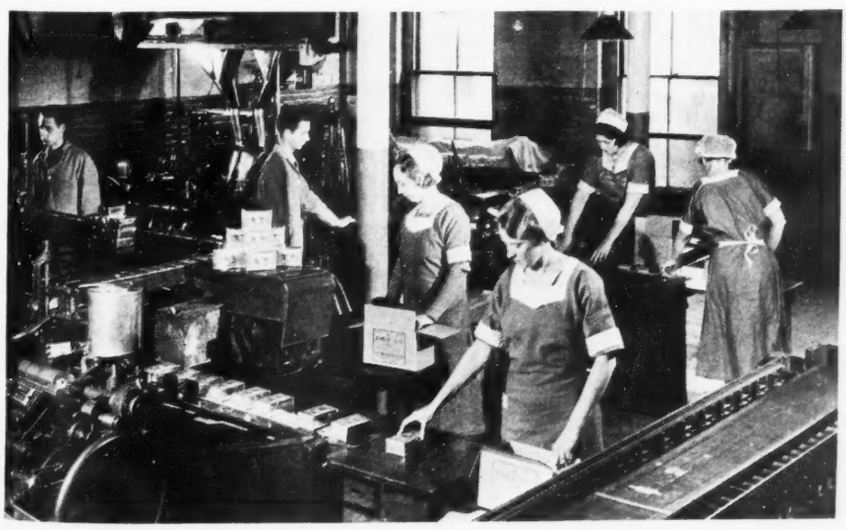
The end folds are held in compact position by metal side plates as the packages are delivered by a chain conveyor to the labeling unit. Here, in the case of Standard Brands Tender Leaf tea, the package gets an all-around paper-band label which is attached to the long dimensions of the packet at all points by an adhesive developed for sticking paper to foil surfaces. In this manner the face and both the end folds are held securely in place and help give the packet maximum resistance to moisture transfer to its contents.

The labeling unit is driven from the same shaft as the bag-making, filling, and closing unit. The shaft is connected with a 5-hp. motor through a Reeves variable-speed transmission on the same base as the motor. Final power transmission from the driving shaft to the various units is by roller-chain drives so that all units are in synchronized operation.

From the labeler the packets are delivered onto the packing-table section of the unit, from which they are hand-packed into corrugated cartons containing respectively 12 and 24 of the 7- and 3½-oz. packages.

As the density of the various types of tea varies, the sizes of the 7- and 3½-oz. packages vary. The machines are much more easily adjusted to handle packages of different lengths than of different widths and depths. Consequently the variations in package sizes of the same weight contents are in length. This is important, too, in that foils of several different widths do not have to be carried in stock.

In its Boston tea packing plant Standard Brands has also cut its floor space requirement by having its packages made as wanted.



Avoids Rise in Price

Although this new package very probably cannot be given full credit for the increase in the Standard Brands, Inc., tea sales, it came into the market at a time when sales would have turned downward if an advance in retail sales price had been made. It also makes possible savings in addition to that of container cost and increased production. The installation itself occupies a floor space area of only 90 sq.ft. and, as the containers are made as wanted, no storage space is required for empty containers which otherwise would have to be carried in stock in the different sizes sufficient to insure continuous operation of the packaging installation during the period it is scheduled to operate.

Not all packaged foods will so readily lend themselves to such a drastic change in style of package and in method of packaging. Yet there always are ways and means of simplifying or improving the production set-up if the economic incentive is great enough; and ofttimes with the result that the product is improved or given better protection against deterioration.

Reviving a Famous Beer

(Concluded from page 542)

copper coil attemporators are used inside the tanks to keep the temperature of the brew down to aproximately 45 deg. F. The reason for these attemporators can be better understood when one realizes that a fermenting wort generates 280 B.t.u. of heat per pound of maltose converted into alcohol and that the 9,480 lb. of maltose necessary to convert a 600-bbl. brew into 3.2 per cent beer will liberate 2,654,400 B.t.u. of heat. A 4 per cent beer liberates more than 3,250,000 B.t.u.

Lined Steel Tanks Used

When the fermentation period is ended, after about 10-14 days for bottom fermentation beer, the yeast settles to the bottom of the fermenter and the young beer is drained off above the yeast layer and pumped through copper piping to the closed cylindrical storage or stockhouse tanks. These too are of steel with inner walls covered with a protective lining.

Housed in rooms refrigerated to 35 deg. F., these tanks keep the beer in an unmolested state and allow it to age for a minimum of three months. During this period the complex molecular constituents of the beer are converted into simpler and more completely soluble substances and the residual yeasts and flocculent proteins have time to settle out, leaving the beer relatively free from suspended solids. In fact, the settling may be sufficient to give a brilliant, sparklingly clear beer, but a single passage through a standard beer filter is made to make certain that no suspended solids pass into the bottles.

When Hupfel beer has reached its maturity and is ready for bottling it is pumped through a No. 4 Karl Kiefer filter using a pulp filter-aid, then through a carbonator to be charged with CO_2 to give total gas content of 0.47 per cent, and finally into another set of steel storage tanks where it is gaged by government agents for federal taxes.

In these tanks the beer is held at 32 deg. F. until forced under 14-lb. air pressure through copper pipes to the filling machine in the newly built bottling plant. By the time the beer reaches the filler and is run into either the 12-oz. or 1-qt. thoroughly cleaned and sterilized bottles its temperature has risen to about 36-38 deg. F. After capping, the bottles pass in a continuous manner to an automatic pasteurizer in which the temperature of the beer is gradually raised from 40 to 145 deg. F. in zone-temperature compartments of the pasteurizer unit, held for about 20 minutes at 145 deg. and then gradually by zone-temperature cooling brought back to 70 deg. F.

These gradual changes in temperature are employed to minimize as much as possible the effect of pasteurizing temperature upon the flavor and appearance of the beer. Such precautions are quite necessary, as in pasteurization lies the essential difference in the processing and handling of draft and bottled beers. Keeping these pasteurizing conditions under carefully selected and automatic control gives basis for the "fresh-from-the-keg" taste.

While air-conditioning in its generally accepted form is not widely used through this brewery, the fermenting and aging of this beer are carried out in rooms that are insulated with cork, equipped with floor drains toward which the floors are sloped to assure complete and rapid drainage, and amply refrigerated with a direct-expansion ammonia system installed in a manner to prevent condensation of moisture on walls and ceilings and to keep the beer at a uniform temperature.

Why A B C Grades Won't Work as Well As Descriptive Labels

(Concluded from page 544)

any more for a given grade under one brand than for another of equivalent A, B, C grade of quality. Why should she? The U. S. Government says that both are alike! So the packer of a quality better than grade A will lose his price premium (there are no B.A.E. grades AA or AAA), and then he can't afford to pay the farmer any premium for better quality raw materials. And hence the quality of such a canner's goods must perforce be allowed to sink to the competitive level. In other words, the loss of the canner will be taken out of the farmer without benefit to the consumer. This is the reason why fixed standards are always minimum standards.

Now let us consider what the Congressional representatives of the farmers in those States will do when agriculture becomes articulate and yelps loudly that the A B C system is cutting down the prices paid to the farmer. It must be recalled that Senators and Representatives actually are supposed to represent all of their constituents—not only consumers but also canners and farmers.

No matter at what level the standards are set, there will immediately arise an intersectional controversy, and the inevitable result will be that the quality of the best goods must sink to the absolute minimum permitted under a given grade. Competition will compel that.

Will that help to build up an industry? Will it better serve the consumer? Will it promote business recovery? Will it help the farmer?

Mr. Riley is smart enough to sense a part of the political aspect of the problem, for he has already said that the canning industry will be called upon to decide where the level of grades shall be established, only he says it in a little different way. But he is clever enough to try to make the canners do the deciding.

Right now, however, it would seem as though the hands of Mr. Riley have been tied by a silken thread. The Code Authority of the canning industry has merely indorsed descriptive labeling. The Code Authority has not asked for a code modification. The reason for it is that, if such a request were actually made, the code would then legally permit Mr. Riley to put into it practically anything he wanted to see there regardless of the nature of the request.

Heating the Vapor-Sealed Bake Oven With Electricity

By G. R. FENNEMA
Baldwin, L. I.

IN A preceding article (FOOD INDUSTRIES, October, 1934), attention was directed to the vapor-sealed oven of the recirculating flue-gas-heated type as an example of what can be accomplished in lowering production costs through lowering fuel costs. Now let us consider the advantage to be gained from the vapor-sealed oven heated by electricity, which is considered the most expensive method of heating.

In the electrically heated oven the same general assumptions in design will be made as in the case of the producer-gas-heated oven discussed in our previous article. In this case the over-all size of the oven will be 2 ft. narrower and the baking chamber 15 in. less in depth because the side flues are omitted and the electric heating units require less space than do the return-bend tubes.

The heating load requirement in this electric oven is practically the same as in the flue-gas-heated oven with the exception that the radiation loss is 27,038 B.t.u. per hour, as against 37,500 B.t.u. This is equivalent to saying that the total heating load requirement of the electrically heated vapor-sealed oven is 119.2 kw.-hr., as compared with 417,500 B.t.u. for the flue-gas oven. The usual type of electrically heated ovens require 180 kw.-hr.

To assure a uniform temperature throughout the baking chamber and avoid "spot heating," an indirect electric system of heating must be used. And, to prolong the life of the heating elements, it is essential that these elements be designed to give the desired baking temperature without their temperature exceeding 1,000 deg. F. At the same time these elements must be protected from the corroding effect of the vapors in the baking chamber.

Most important features of these heating elements are:

1. Ease with which this heating system may be withdrawn from the oven.
2. Ease with which each heater may be checked from time to time as to its heating capacity.
3. Exclusion of oxidizing effect of air and vapors from the heating elements.

As the heating surfaces in this oven consist of 102 two-inch standard pipes, 10 ft. long, which give a heating surface area of $\frac{102 \times 10}{1.608}$, or 635 sq.ft., the effective radiating surface is 66 per cent of 635 sq.ft., or 420 sq.ft.

Maximum load for this oven is 125 kw., which is equivalent to 298, $\left(\frac{125{,}000}{420}\right)$, watts per square foot or 2.06 watts per square inch. In terms of B.t.u. per square foot per hour it is 298x3.412, or 1,020 B.t.u.

Since the required heating capacity of the radiating surface must be 1,020 B.t.u., the temperature of the tube surface becomes $C\left[\left(\frac{T_1}{100}\right)^4-\left(\frac{T_2}{100}\right)^4\right]$ $= 0.105\ (X^4 - 10.6^4)$ or $\frac{1{,}020}{0.105} = X^4 - 12{,}600$

$X^4 = 9{,}700 + 12{,}600$, or 22,300

$X = \sqrt[4]{22{,}300}$ or 12.22 B.t.u. per square foot per hour, which means that the absolute temperature of the heating system is 1,222 deg. F. or 762 deg. F. normal temperature.

This means that, neglecting the temperature drop in the tube wall, the heater inside the tube is in the same condition as though placed in an oven of 762 deg. F. temperature. To make sure that the temperature of the heating element does not exceed 1,000 deg. F. we must determine the area of the required heating surface.

As the tube temperature (T_2) is 762 + 460, or 1,222 deg. F. absolute; the heater temperature (T_1) is 1,000 + 460, or 1,460 deg. F. absolute; and the capacity of the heater is $\frac{125{,}000}{102}$ or 1,225 watts, which is equivalent to 5.9, $\left(\frac{1{,}225}{208}\right)$, amperes, the resistance of heater must be $\frac{1{,}225}{(5.9)^2}$ or 35.2 ohms.

And as radiation in B.t.u. per square foot per hour is $C\left[\left(\frac{T_1}{100}\right)^4-\left(\frac{T_2}{100}\right)^4\right]$ $= 0.14\ [14.6^4 - 12.22^4]$, or 3,250 B.t.u. per hour, the minimum heating

• This article concludes the series by Mr. Fennema on bake ovens, in which he has discussed the benefits to be derived through the avoidance of air infiltration.

• Although this article deals primarily with the vapor-sealed oven designed for electric heat, a summary of estimated comparative baking costs per 1000 lb. of product for the different types of ovens is included.

• Recovery of byproduct alcohol from baking-chamber vapors is provided for and is cited as an additional means of lowering of baking costs. Avoidance of air infiltration is held to give a 33 1/3 per cent saving in heating expense and a 4 per cent decrease in oven shrinkage.

surface area is $\frac{125{,}000 \times 3.412}{3{,}250 \times 102}$, or 1.28 sq.ft. per heater.

As No. 15 B. & S. Nichrome wire at 1,000 deg. F. has a resistance of 250.8 ohms per 1,000 ft. and a carrying capacity of 15 amp., the length of heating coil would be $\frac{35.2 \times 1{,}000}{250.8}$, or 140 ft. Consequently the total area of this heater surface is 140 ft.x 12 in.x0.057x3.14, or 300 sq.in.

If the effective radiating area of the heating surface is 66 per cent of the total, it is 66 per cent of 300 sq. in., or 1.39 sq.ft. On this basis the heater temperature will be somewhat below 1,000 deg. F. and a long life will be assured at $\frac{1{,}225}{300}$, or 4.07, watts per square inch of wire surface.

Whereas the average existing electrically heated continuous bake oven has a baking load of 85 kw. per 1,000 lb. of product, the best recorded baking load is about 75 kw. per 1,000 lb. of product. In comparison, the perfect vapor-sealed oven covered in the design under discussion has an average baking load of $\frac{119.2}{2}$, or 59.6 per 1,000 lb. of product.

The difference between the baking loads (85 — 59.5, or 25.5 kw. per 1,000 lb. of product) represents the additional heat required in the ordinary type of oven to overcome the drying and cooling effect of infiltrated air and the excess steam requirements.

Whatever type of oven and heating system may be used, the cost of baking should take into account all direct and indirect charges, as illustrated in the following examples.

1 In an oil-fired steam-pipe oven, costing $26,000, having a capacity of 2,000 lb. of bread per hour, and operating sixteen hours per day, 300 days per year for a total of 4,800 hours, the cost of baking is computed as follows:

If the equipment is to be retired in 10 years, the fixed charges will be: depreciation or sinking fund to replace oven, 7 per cent; interest, 6 per cent; maintenance, 1 per cent; taxes, 1 per cent; insurance, 1 per cent. Total 16 per cent of $26,000 cost, or $4,160.

On the basis of 4.5 gal. oil per 1,000 lb. of bread at $0.07 per gallon, the fuel cost is $3,024.

At $0.02 per kilowatt-hour the power cost (5 kw. per hour) is $480, and at $0.60 per hour for operator the labor cost is $2,880, making a total baking cost of $10,544 for a year.

For this type of oven the cost of baking 1,000 lb. of product is $\frac{\$10{,}544}{2 \times 4{,}800}$, or $1.10.

If the oven is used only 8 hours per day the cost is $\frac{4{,}160 + 1{,}512 + 240 + 1{,}440}{2 \times 2{,}400}$ or $1.53 per 1,000 lb. of product.

2 In a perfect vapor-sealed oven,[1] costing $18,500, having a capacity and hours of operation the same as the steam-pipe oven, and equipped with an anthracite gas-producer unit costing $7,500 and capable of supplying gas to three such ovens (smallest producer made has this capacity), the computed baking cost is $1.23 per 1,000 lb. of product, assuming that the equipment shall be retired in 10 years.

In such an oven the operating costs of the gas producer are:

Fixed charges, 16 per cent of $7,500	= $1,200
Fuel = 171 tons of coal @ $5	= 855
Stoker labor @ $0.60 per hour	= 2,880
Water	= 240
Power @ $0.02 per kw.-hr.	= 336
	$5,511

Operating costs of the oven are:

Fixed charges, 16 per cent of $18,500	= $2,960
Cost of fuel to the oven	= 5,511
Fan and motors power cost, @ $0.02 per kw.-hr.	= 480
Labor cost, 4,800x$0.60	= 2,880
Total for the year	$11,831

On such basis the cost of baking 1000 lb. of product is $\frac{11{,}831}{2 \times 4{,}800}$, or $1.23.

If the oven is used only 8 hours per day the cost per 1,000 lb. of product is $1.66.

These figures show that there is a slight advantage for the oil-fired oven because the gas-fired oven is charged with a producer operating at only one-third of its rated capacity. If the same producer is operated at full capacity to supply steam to three ovens, the annual operating costs for the producer are:

Fixed charges, 16 per cent of $7,500	= $1,200
Fuel cost—480 tons coal @$5	= 2,400
Stoker labor @ $0.60 per hour	= 2,880
Water	= 500
Power @ $0.02 per kw.-hr.	= 600
Total for three ovens	= $7,580

or $2,525 for one oven.

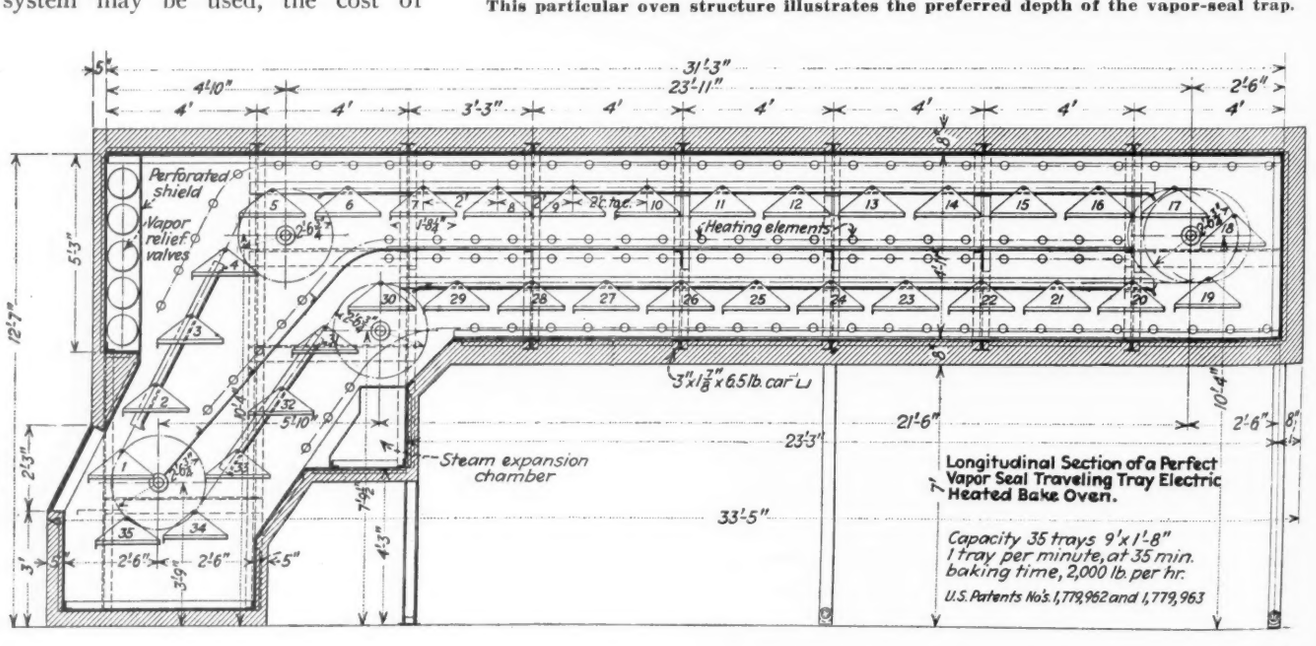
On that basis the baking costs for the same perfect vapor-sealed oven are $\frac{2{,}960 + 2{,}525 + 480 + 2{,}880}{2 \times 4{,}800} = \$0.92$ per 1,000 lb. of product.

The preceding examples illustrate how carefully one must consider all costs in selecting bakery equipment.

Now let us consider the vapor-sealed oven, Fig. 1, equipped with an

[1] FOOD INDUSTRIES, October, 1934, p. 453.

Fig. 1—IN THE ELECTRICALLY HEATED VAPOR-SEALED OVEN the space normally occupied by the heating plant can be converted into proof rooms or storage space, depending upon length of dependent leg permitted by the available headroom. This particular oven structure illustrates the preferred depth of the vapor-seal trap.


Perforated shield
Vapor relief valves
Heating elements
Steam expansion chamber
3"x1/8"x6.5 lb. car
Longitudinal Section of a Perfect Vapor Seal Traveling Tray Electric Heated Bake Oven.
Capacity 35 trays 9'x1'-8" 1 tray per minute, at 35 min. baking time, 2,000 lb. per hr.
U.S. Patents Nos. 1,779,962 and 1,779,963

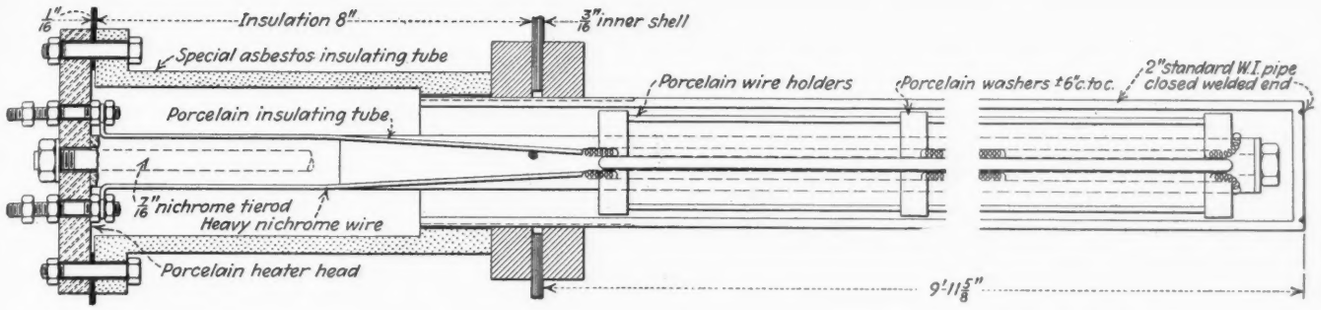


Fig. 2—FOR SATISFACTORY PERFORMANCE of the electric vapor-sealed oven illustrated in Fig. 1, 102 heaters of this design are required. The elements in these heater units consist of No. 15 B. & S. Driver Harris nichrome wire 140 ft. long with resistance of 35.2 ohms at 1000 deg. F., operating on a 208-volt single-phase current.

electric heating system and taking a plant load sufficient to rate a power charge of $0.0125 per kw.-hr.

The approximate cost of oven is $23,000. Capacities and other data are the same as in the previous examples.

Fixed charges, 16 per cent of $23,000	= $3,680
Electricity, 119x4,800 = 571,000 kw. @ $0.0125 per kw.-hr.	= 7,130
Power cost (motors) @ $0.0125 per kw.-hr.	= 300
Labor, 4,800 hr. @ $0.60 per hour	= 2,880

Total operating cost for the year $13,990

With electricity the cost of baking 1,000 lb. of product is $\frac{13,990}{2\times4,800}$ or $1.45.

If the oven is used only 8 hours per day, the cost of baking 1,000 lb. of product is $1.80.

To compare the baking costs more easily let us summarize the results of the 4 examples, with ovens operating at full load, 4,800 hours per year.

1. Indirect oil-fired steam-pipe oven of average construction = $1.10 per 1,000 lb. of product.

2. Perfect vapor-sealed oven with a gas producer having capacity to supply three ovens, but supplying only one = $1.23 per 1,000 lb. of product.

3. Perfect vapor-sealed oven with a gas producer supplying three ovens = $0.92 per 1,000 lb. of product.

4. Perfect vapor-sealed oven with electric heating system = $1.45 per 1,000 lb. of product.

Other points of importance may also be summarized. They are:

a. In a usual steam-pipe-heated oven construction it is impossible to vary the heat at will from front to rear, or top to bottom, except by changes in the temperatures of the individual furnaces, which changes take effect immediately on both top and bottom. The heat is not equally distributed lengthwise of the oven construction on account of the spotty heat condition of the furnace walls and the crowded mass of pipes in the vicinity of these furnaces.

b. In peel ovens, the old mercury oven thermometers registered very little other than the nearest wall temperature, which fluctuated but little. In the modern type oven the indicating thermometers, reading several temperatures by means of thermocouples, do register a temperature that is somewhere between the heating-surface temperature and the oven gaseous-fluid temperature, but how near the true temperature this reading is depends entirely on how close the thermocouple is placed to a radiating surface. One can vary the readings at will by moving the thermocouple nearer or further away.

c. If proper charges are made in computing maintenance cost in the steam-pipe heated oven, covering all repairs on furnaces, oil burners, oil pumps, blowers, automatic controls, and include the burned-out steam pipes, one will find that 1 per cent allowed in our computation of baking costs cannot cover the cost and needs to be increased.

d. The recirculating type flue-gas-heated oven[1] has some degree of flexibility of heat control to top and bottom, but lacks control lengthwise. The same comments may be made regarding it as previously made for the steam-pipe-heated oven with respect to registration of oven temperature and maintenance.

e. We feel that heating by electricity is the ideal heat for a perfect vapor-sealed bake oven. The whole of this oven is easily made fully vapor-tight. The heating surface can be made large, composed of many small units, and the heaters can be designed and guaranteed for very long life. The oven proper takes less space and the dependent leg can be made long enough to allow ample headroom under the ovens, saving all floor space except that actually occupied by the dependent leg. The electrical heating elements may be distributed all along the path of travel and may be split up in many sections independent of each other. Uniformity of temperature or variation in temperature can be controlled at will to a close degree with dependable automatic control, providing for any desired degree of flexibility.

Saving in shrinkage, amounting to 4 per cent of the weight of the products, can be assured at all times, for no vapor leaks can develop in the heating system, thus securing at the same time the assurance that all by-products may be collected without interruption caused by leaky tubes.

A perfect vapor-sealed oven prevents all heat losses into the bake shop, assuring an agreeable working temperature and avoiding need of ventilating systems. Furthermore, there are no dust, ashes, fumes or smoke to contend with, chimneys are not necessary, and there are no fire and explosion hazards.

Delivery and storage charges of fuel do not exist with electricity.

Maintenance in electric bake ovens is small, as there are no grates, burners, retorts or fans to wear out. Depreciation in a well-constructed electric bake oven is small, because its heating system is unlikely to become obsolete. The chances are that by the increase in electric current consumption in the future the rate and, consequently, the cost of baking will be lowered.

Therefore it should not be out of place to depreciate a properly designed and constructed electric bake oven over twenty instead of ten years.

On the 20-year basis the baking cost figures become:

Sinking funds (depreciation)	3 per cent
Interest	6 per cent
Maintenance	1 per cent
Taxes	1 per cent
Insurance	1 per cent
	12 instead of 16 per cent

Fixed charges, 12% of $23,000	= $2,760
Electricity @ $0.0125 per kw.-hr.	= 7,130
Power cost @ 0.0125 per kw.-hr.	= 300
Labor, 4,800 hr. @ $0.60 per hr.	= 2,880
Total for year	= $13,070

against $13,990, which is $1.36 instead of $1.45 per 1,000 lb. of product.

(Turn to page 578)

Surveys Point Way to Truck Transportation Savings

Survey by American Can Company Shows Ability of Tractor-Trailer Principle to Reduce Investment and Operating Expenses

TO THOSE EXECUTIVES of companies in the food field who believe that trucks are trucks and nothing much can be done about reducing the cost of the transportation service which they render, the results recently obtained by American Can Co., indicate that economies can be made by a thorough survey of motor-trucking operations. The objects of the study were to determine what form or combination of available motor transportation equipment would best suit the company's delivery of cans from its manufacturing plants to customers in the same area from economic and service viewpoints, and to develop from the results of the survey in the district in which it was made a standard hauling unit which would be applicable in a general way to all company plants requiring motor-transportation equipment.

The survey was made in the metropolitan district of New York City and the results were a reduction in the number of pieces of equipment from 29 regulation trucks with 16-ft. bodies to 17 tractors and 26 semi-trailers with 18-ft. bodies; a reduction in capital investment of approximately 50 per cent; reduction in operating expense of 33 per cent per year; and a reduction in the dead unladen weight of the tractor-trailer combination of 40 per cent with an increased pay-load capacity of about 35 per cent.

Stated briefly, these results were obtained by the survey through a wider application of the tractor-trailer principle and the adoption of a modern tractor and semi-trailer and a light-weight body of unusual construction.

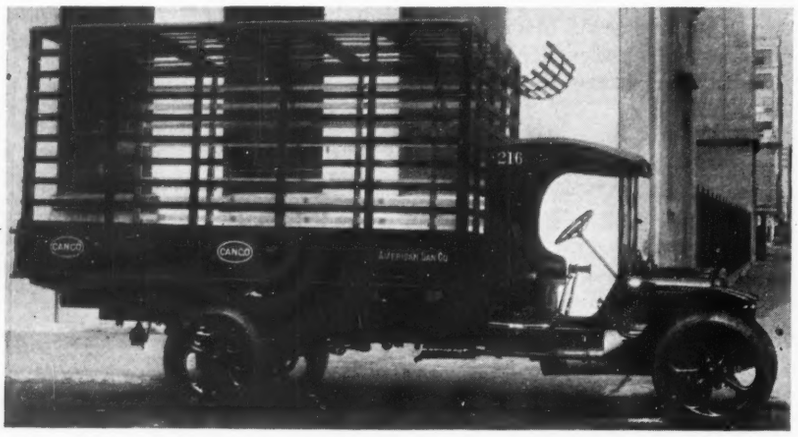
Of course, in this connection it must be borne in mind that the character of the load—cans which weigh 300 lb. or less per running foot of body length—played an important part in the standardized equipment selected. Nor can it be inferred that the solution of the company's trucking problem by the application of the factors enumerated above can be used in their entirety by all other companies in the food field. It is maintained, however, that the same general type of survey will bring appreciable results to any company in the food industries, irrespective of the particular products handled.

The American Can Co. began using gasoline trucks for the delivery of its finished product as far back as 1914. As early as 1916, tractors and semi-trailers were employed at a certain few of the company's plants. These units were installed because of their ability to haul heavier loads than with a regulation truck with the same size power plant, and because of the saving in truck loading time by reason of being able to load or unload one semi-trailer while the tractor with another semi-trailer was in operation on its route.

The company's first tractors and semi-trailers were of the heavy-duty type with solid tires and were used principally for hauling tin plate between railroad yards and the company's plants. The advantages found in the use of tractors and semi-trailers in that work gradually led to an increased number of such units in the company fleet employed in the delivery of finished products to customers.

In those early days, tractors and semi-trailers were heavy, slow and cumbersome units and could not be used for all deliveries. Consequently they were used principally as supplements to the company's delivery fleet of regulation trucks.

However, developments in the automotive industry in the past few years have made it possible to design a tractor and semi-trailer unit which is, as a rule, no longer than an ordinary long-wheelbase truck. Because



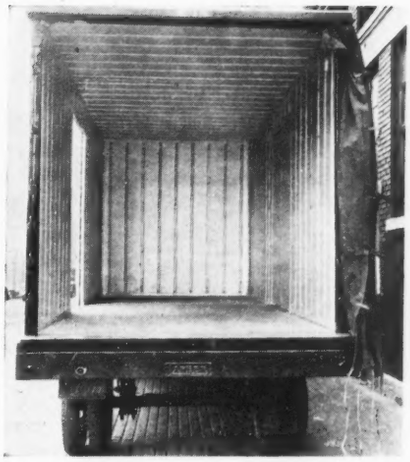
THE OLD

The old type of truck and body, which has been superseded by the new American Can Co. standardized tractor and semi-trailer unit shown on the opposite page. The body has very little advertising value and the cans must be protected by unsatisfactory and expensive side and top tarpaulins.

of the articulating action of a tractor and semi-trailer unit, it generally can be maneuvered into places where a long-wheelbase truck cannot be.

Most recent developments as a result of the metropolitan district survey have led to the adoption of a unit which consists of a 1½-ton, light-duty, short-wheelbase tractor; a light-weight semi-trailer chassis and a corrugated, all-steel, electrically welded body of the fully enclosed type, as illustrated herewith. This new unit is actually several feet shorter than the company's previous units and is no longer than its longest regulation truck. In service, the new tractor and semi-trailer unit has proved so satisfactory that it will be used gradually to replace all regulation trucks until the company's entire fleet will consist of such units.

Other operating advantages of the tractor and semi-trailer unit brought out during the survey, in addition to less lost loading-time at shipping platforms, include less supervision, because of the fewer tractors required; reduction in the number of loading crews, due to having semi-trailer bodies always available; reduction in driver overtime; reduction in outside truck hire; tractors not laid up for body repairs and painting; easier maintenance of the engine power plants, because there are no bodies on the tractors; and the possibility of leaving loaded trailers at the customers' platforms in some cases.



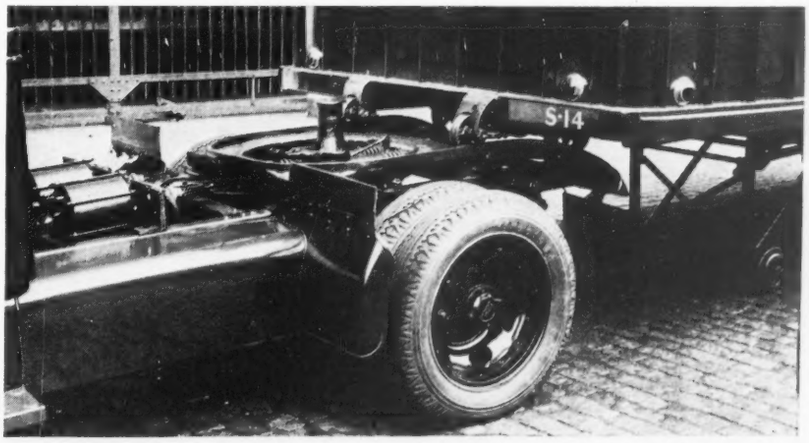
Rear view of the new light-weight corrugated steel body showing absence of interior vertical stiffeners and smooth interior for easy loading.

The tractor of the new standardized unit is a White model 701 with a short wheelbase of 132 in. to provide a small turning radius. It is fitted with an insulated and ventilated driver's cab; booster brakes for both tractor and trailer wheels, helper springs, safety glass windshield and other standard White fittings.

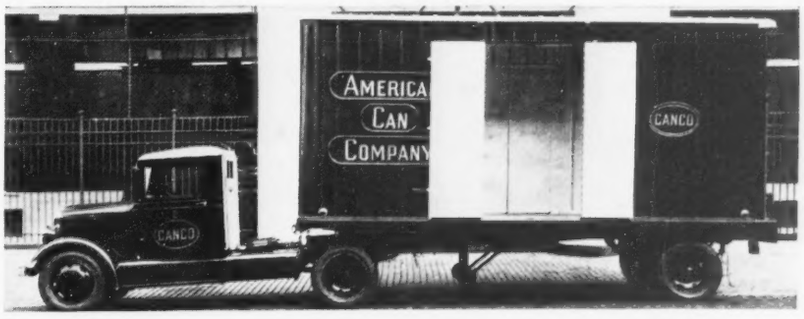
The trailer portion of the unit is a Lapeer model L-20 semi-trailer of the full automatic type which means that it can be entirely connected or disconnected from the driver's seat.

The semi-trailer body was made in the fully inclosed type because it affords full protection to the cans from the weather and eliminates the necessity for the expensive, unsatisfactory and inefficient roof and side tarpaulins used on the old type, open-rack bodies. Body wheel-housings were not employed because they break up the floor area and interfere with efficient loading.

The body, furnished by the Highland Body Co., weighs 2,970 lb. and has dimensions of 96½ in. clear loading height, 90 in. inside width and 18 ft. inside length. It is made of corrugated steel sheets of standard size with no structural uprights, the vertical strength being furnished by the sheets themselves. The body interior is smooth, as this is an important advantage for easy loading.



Close-up of the fifth wheel of the Lapeer full automatic semi-trailer, showing pick-up wheels, landing trailer wheels, booster brakes and mudguards on tractor.



THE NEW

Front and side view of new White tractor and Lapeer semi-trailer unit adopted by the American Can Co. for final delivery of its products. Note the fully inclosed driver's cab and the corrugated steel body with side doors and attached signs. The steel sheets are of standard size; are electrically welded at the joints; and provide sufficient vertical stiffness without inside members. The body interior is smooth as this type of design is an important advantage for easy loading.

Practical Problems of

TRUCK TRANSPORTATION

Discussed by Executives in the Food Industries

THIS MONTH'S QUESTION

QUESTION 4

Beer Delivery Bodies

1—When you decide to buy trucks for the delivery of beer in kegs, how do you decide on what type of body to use?

2—Are panel bodies necessary for summer use, or are rack bodies with tarpaulin covers preferable?

3—What are the advantages of setting the body directly on the frame, with wheel housings over the rear wheels?

Rack Bodies Are Preferable

THE TYPE of body to be installed on trucks to be used for keg-beer transportation depends upon the distance which the beer is to be hauled and the cost of such a body. Our firm turns its attention strictly to local hauling of keg beer and we use rack-body trucks with tarpaulins and heavy sacks as protection. Such bodies cost less and have many advantages as far as handling packages on and off the truck. Other closed-body types would have no advantage over this type, since the tarpaulins we use are always kept wet, which in turn furnishes the necessary moisture to keep our cooperage wet.

We employ wooden cooperage only and consequently our problem of heat transfer is not as great as in the metal packages that are being used by a number of breweries where it is found necessary to employ the closed type of truck body for transportation.

Panel bodies are necessary for summer use in some instances where the hauling distance requires more adequate protection than a rack truck provides. We would say that, in the case of metal beer packages, this is one point that needs much attention, but in the case of wooden packages on long hauls with rack bodies, it is possible to protect the packages adequately with tarpaulins and other covers of this nature. However, we are very strict in directing the use of our trucks with such bodies for the hauling of our keg-beer products. Since our hauling is purely local, we have practically no trouble in providing protection on rack-body trucks.

In the wheel-housing type of construction it is possible to take advantage of the additional floor space for body area, thus increasing the carrying capacity of the truck. This gives a very satisfactory body, especially in the case of rack bodies, from the standpoint of unloading, loading, and inspection from any point off or on the truck.—R. W. BUSSEN, *assistant general manager, Anheuser-Busch, Inc., St. Louis, Mo.*

Many automotive transportation experts who have taken part in the rapid growth of the use of insulated truck bodies for food products predict the general use of such bodies for the retail delivery of keg and bottled beer. A good example of this trend is shown above. It pictures one of the latest models of trucks for keg-beer delivery as used by the United States Brewing Co., Chicago, Ill. The chassis, a cab-over-engine Available, carries a body 13 ft. long, 7 ft. wide, and 6 ft. high. The body is well insulated so that beer loaded in the morning can be kept cold all day and delivered to customers in fine condition for immediate use. The truck's short over-all length is an advantage in congested traffic.

Tarpaulins Used in Summer

WE USE a truck with a flat bed, wide enough for four half barrels. The side has a low guard rail about six inches high. In place of a tail gate we have a back-board about three feet high, carrying our name. We prefer a short wheelbase truck, as it is more convenient for delivery in the crowded parts of town. This truck is suitable for hauling cases as well as kegs and barrels.

In summer we cover our beer with tarpaulins on the truck just described. We have not found it necessary to use panel or rack bodies.

In setting the body directly on the frame, the load is much closer to the ground. This is a big advantage on long hauls at high speeds, but, as 95 per cent of our deliveries are in the city, and the rest in close proximity, this does not interest us. The lower truck bed would seem an advantage in unloading, but we have no trouble with our trucks without wheel housings.—ALBERT ULMER, *brewmaster, the Oertel Co., Louisville, Ky.*

Rack Bodies Are Accessible

IN THE decision relative to purchasing motor trucks for keg-beer delivery, three conditions must be satisfactorily fulfilled:

First, the number of kegs necessary to economical delivery of beer, required

by the particular route or by the peculiar local circumstances. In San Francisco, where we enjoy an equable or even climate, with little rain, we find the stake body an economical and satisfactory medium of delivery. It allows access to kegs from every portion of the truck body and permits a large number of kegs to be transported at the same time and thus fulfills the second condition, which is speed in handling.

A tarpaulin cover is preferable during hot summer days, especially if aluminum or other metal kegs are being used.

The third consideration is the necessity of handling kegs with as little damage to container as possible. It is for this reason that we find bodies set directly on the frame, with wheel housings over the rear wheels, most satisfactory. By bringing the drop from the floor of the body to the pavement to the minimum distance possible under the hilly conditions of transportation occurring in this city, breakage and damage to the container is reduced.—M. METZENBAUM, *John Wieland Brewing Co., San Francisco, Calif.*

Panel Bodies for Case Beer

OUR choice on types of bodies is the open type of local deliveries and the side-door panel-body design for out-of-town deliveries.

Panel bodies are necessary only for summer use in connection with case deliveries. The open-type body with a canvas is most desirable for all local keg deliveries. The side-door panel body is preferable for all bottle-goods deliveries.

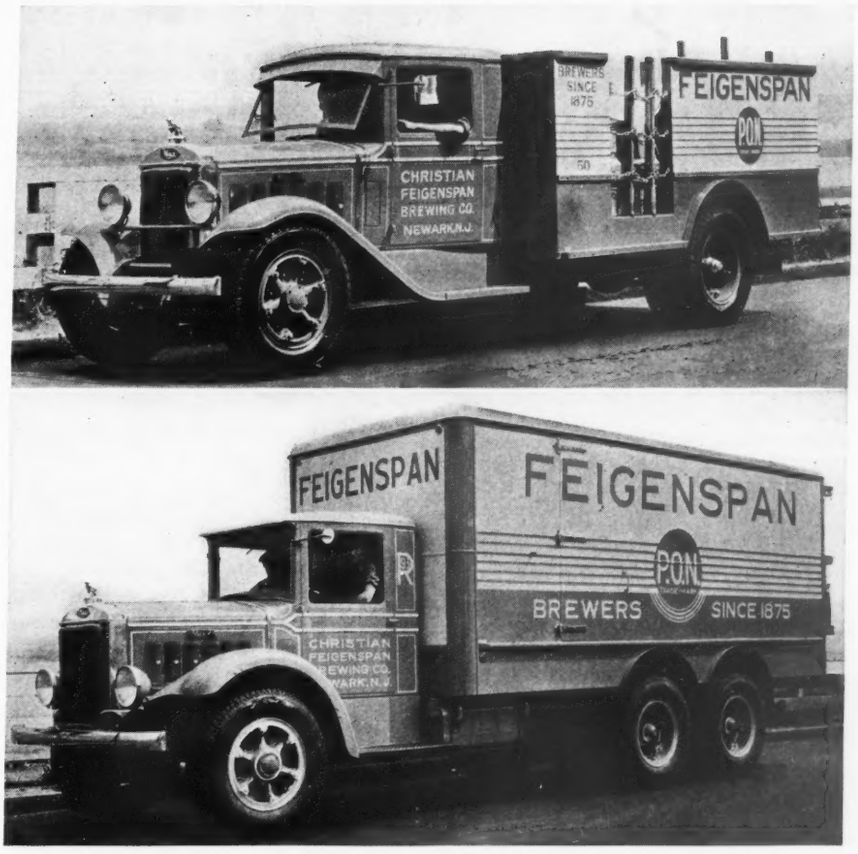
Setting the body on the chassis is an advantage. A low platform side is always an advantage in unloading. A package weighing two hundred pounds would naturally receive less shock with a lower drop. This low type of body is not necessary in bottle-goods service.—J. J. KREISA, *Lion Brewery, New York, N. Y.*

Prefers Insulated Bodies

KEG BEER should be kept cool all the time. It is therefore best to use a body that is well insulated. The kegs are heavy to handle. Therefore, the floor of the body should be as near as possible to the ground. The body must be of ample size to permit loading more empty kegs than the number of full ones unloaded at certain stops. Also, where different kinds of beer are handled, it is sometimes necessary to shift the load to get a particular kind or size of keg that is required.

Panel bodies are very much better than rack bodies with tarpaulins. Tarpaulins are very easy to tear and cannot possibly keep beer in the same condition as an insulated panel body.

By setting the body directly on the frame and using wheel housings over the rear wheels, the floor of the body is kept lower to the ground, and this facilitates unloading. It also has the advantage of keeping the center of gravity low and making the truck easier to handle over rough roads.—H. A. WEMIN, *purchasing agent, United States Brewing Co. of Chicago, Chicago, Ill.*



Two contrasting body types, both on Mack chasses, as employed by the Christian Feigenspan Brewing Co., Newark, N. J. Note the utilization of display space on the semi-stake body at the top. It has a capacity of 40 half barrels. The Mack model B X six-wheeler directly above, with panel body, is used on long runs and has a capacity of 350 cases.

Wheel Housings Help Unloading

WE ARE continuing to use the same general type of bodies on our delivery trucks that we employed prior to prohibition. These are rack-type units for keg-beer delivery and panel bodies for handling our beer in cases. In the summer, we employ tarpaulin covers over the kegs.

For the delivery of case beer in bottles we prefer panel bodies. Possibly on account of the relatively short hauls in retail delivery, we have not found it necessary to insulate our panel bodies.

While the early types of both our open-rack and panel bodies do not have wheel housings, we favor the use of such housings as a means of lowering the body floors to aid in unloading and our later types of bodies are fitted with wheel housings.—ERNST OBERMEYER, *Liebmann Breweries, Inc., Brooklyn, N. Y.*

To our Automotive Readers:

Realizing the many and varied problems of motorizing transportation which are constantly arising in the handling of all kinds of food products, the editor will be glad to receive suggestions as to what are the particularly pressing problems that readers would like to have discussed in these pages.

Panel Bodies on Long Hauls

When we are ready to buy trucks, we decide on the type of body according to the requirements of the particular truck and its use. On long hauls, we usually employ panel-type bodies and open-type bodies for draft-beer deliveries on short routes.

Panel bodies have been found desirable for summer use.

Wherever possible, bodies are designed without wheel housings.—WILLIAM ROSE, JR., *assistant to the president, Christian Feigenspan Brewing Co., Newark, N. J.*

BOOKS RECEIVED

COLLOID CHEMISTRY. By Arthur W. Thomas, Columbia University. Published by McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y., 1934. 512 pp., 8¼x6⅛ in.; cloth; illustrated. Price $4.

As an outgrowth of the author's university courses on colloid chemistry this treatise deals with colloidal dispersions from their crystalloidal chemistry aspect. Chapters on proteins and carbohydrate colloids are of special interest to food technologists. Those familiar with elementary inorganic, organic, and physical chemistry can understand the contents of this book. It is one of the International Chemical Series.

MODERN BREWING. Second Edition. By Carl A. Nowak. Published by Carl A. Nowak, St. Louis, Mo., 1934. 390 pp., 9½x6½ in.; cloth; illustrated. Price, $7.50.

Designated as a practical handbook of contemporary brewing practice, this edition of "Modern Brewing" is based on the English translation of Prof. Heinrich Luers' authoritative book, "Grundriss der Bierbrauerei." Books and papers by other brewing authorities are drawn upon for additional information and sometimes constitute, in condensed form, the contents of chapters in the book. The author himself writes from considerable experience in the brewing industry.

THE REFRIGERATING DATA BOOK AND CATALOG. Published by the American Society of Refrigerating Engineers, 37 West 39th St., New York, N. Y., 1934. 576 pp., 9¼x6½ in.; flexible fabricoid; illustrated. Price, $3.50.

Seventeen new or wholly rewritten chapters are included in the second edition of this authoritative handbook. The contents is divided into five sections covering fundamental data, principles of refrigeration, refrigerating machinery, refrigerating equipment, and application of refrigeration. Each of the 30 chapters is prepared on the assumption that the prospective reader will have a knowledge of engineering. The last 100 pages comprise the catalog and the list of A.S.R.E. members.

THE CULTURE AND MARKETING OF TEA. By C. R. Harler, Tea Consultant. Published by Humphrey Milford, Oxford University Press, 114 Fifth Ave., New York, N. Y., 1934. 389 pp., 5¾x8¾ in.; cloth; illustrated. Price, $6.

This book is a comprehensive treatise by a scientist and trained observer who has spent fourteen years in the tea countries of the world familiarizing himself with all phases of the industry. Various processes are explained as well as described. Production and consumption data for the various countries of the world are included.

THE PROBLEM OF CHOCOLATE-FAT BLOOM. By Robert Whymper. Published by the Manufacturing Confectioner Publishing Co., the Merchandise Mart, Chicago, Ill., 1933. 127 pp., 6⅝x9¼ in.; cloth; illustrated. Price, $2.50.

Both the technical and the practical aspects of this highly controversial subject are presented in monograph form. Benefits derived from the use of lecithin are indicated graphically as well as by discussion in the body text.

YOUR MEALS AND YOUR MONEY. By Gove Hambidge. Published by Whittlesey House, McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y., 1934. 190 pp., 7⅝x5¼ in.; cloth; illustrated. Price, $1.50.

Written in an easily read style that makes even statistics sparkle and have a real significance, the contents of this book seeks to correlate dietary plans and food costs. Although the book is ostensibly for the food consuming public, it is worthy of reading by the food manufacturer because the author contends that a shift in diet throughout the United States could bring an acute underproduction in place of the overproduction that is claimed to be the present status of our national food-producing plant.

THE PRINCIPLES AND PRACTICE OF WINE MAKING. By W. V. Cruess, Professor of Fruit Technology, University of California. Published by the Avi Publishing Co., Inc., 31 Union Square, New York, N. Y., 1934. 212 pp., 7⅝x5½ in.; cloth; illustrated. Price, $3.50.

Until now there has been no book in the English language dealing with modern methods of industrial wine making and discussing the theory and principles upon which wine making is based. Much of the text is from the author's own experience and laboratory studies during the past 23 years. Use also is made of information published by other investigators both in the United States and abroad, especially from those who have published in the French and German languages.

Conditioned Air Pays Dividends

(Concluded from page 536)

which contains about 81,000 cu.ft. of space, delivers 7,000 cu.ft. of air per minute, changing the air in the room more than five times an hour. This conditioner, as are the others, is isolated by a glass inclosure, the doors of which are locked to prevent anyone from tampering with the adjustment of the thermostats.

The thermostats that automatically control this air-conditioned system are adjustable so that the dew-point and dry-bulb temperatures may be regulated to give different temperatures and humidities. Of course, the range of adjustment is limited, for the units were designed to meet certain fixed conditions. Conditioners with a wide range of adjustment are available, however.

To check the thermostat settings to make sure that the temperature and relative humidity are correct, there is in the chicle-conditioning room a recording thermometer which measures wet-bulb and dry-bulb temperatures. Conditions in the other departments are checked four or five times daily with a sling psychrometer.

Since this air-conditioning system was installed in 1920, there have been some new developments in the line of air-conditioning equipment. The centrifugal compressor, steam-jet refrigeration, and compact, self-contained units are outstanding. In addition to taking much less space than the reciprocating units, the centrifugal compressor is low in mechanical friction, the power required to drive it decreases as the load drops off, and its design is such that it cannot build up a dangerous pressure.

The steam-jet refrigerating machine used in some air-conditioning installations has some advantages where the temperature of the water used in conditioning does not have to be very low. However, it requires a large quantity of condensing water.

As for the humidifying-dehumidifying units, the modern type is essentially the same as those used in the American Chicle plant, though more elements may be included if conditions require. A complete unit with preheater coils and an automatic filter is illustrated.

Plants that need only to clean the air will find available a wide selection of efficient filters of the cloth, glass-wool, steel-wool, cyclone and oil types, as well as units that use water to wash the air.

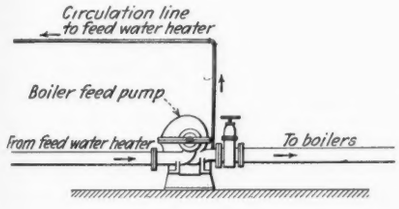
The air-conditioning system used in the American Chicle plant was designed and installed by Carrier Engineering Corp., Newark, N. J.

IDEAS . . . FROM PRACTICAL MEN

Recirculation of Water Protects Pumps

When centrifugal pumps are used for boiler feeding purposes, there is danger of damaging the pump should any valve in its discharge line be closed so that the flow of water through the pump is stopped completely. With no flow through the pump, the churning action of the impeller has a tendency to vaporize the water, causing the pump to lose its suction. As the internal surfaces of the pump depend on water for lubrication, serious damage from overheating may result if this occurs.

To eliminate this danger and to avoid the possibility of boiler-feed-



water failure, a small pipe line may be connected to the discharge of the pump and arranged so that it can be discharged to the feed-water heater or surge tank, as shown in the sketch. If valves are used in this line, they should be sealed in the open position to insure a flow of water through the pump at all times.

The slight loss of pump efficiency caused by the recirculation of from 2 to 5 per cent of this water will be more than offset by the gain in reliability of the unit. As the heat in the recirculated water is returned to the feed-water heater, there is no loss of heat other than that caused by radiation from the small line.

S. H. COLEMAN, *Waynesboro, Va.*

Tank for Cleaning

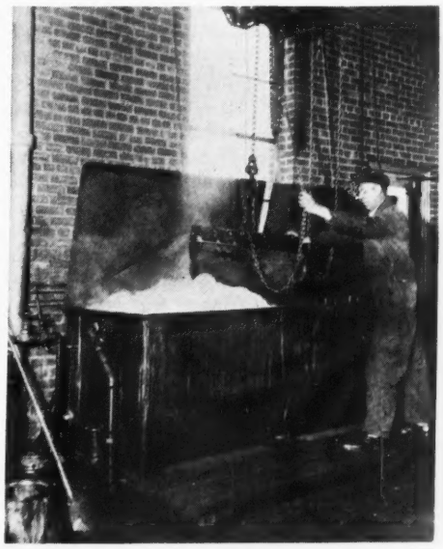
Trucking departments of food plants, in maintaining equipment, must carry out many difficult cleaning jobs. For this type of work, one plant uses a home-made cleaning tank that gives satisfactory results.

This tank was constructed of sheet iron, plain, at a cost of about $50. It is heated by a steam coil which is placed in the back and protected by a baffle. The water is agitated by compressed air.

A partition divides the tank into two equal parts, one for 250 gal. of detergent solution, the other for rinsing. A cleaning solution of 200 gal. of water and 40 lb. of detergent costs about $2.50, lasts two weeks, and will serve for four complete overhaul jobs—motors, transmissions, axles, springs, etc.—each week.

Heavy parts are placed in the tank with a traveling chain hoist. After 30 minutes in the cleaning solution, they are removed to the other compartment and rinsed with a hose, after which they are practically as clean as new iron.

To clean the motors and other parts with kerosene and by hand would be much more costly. For axles and parts needing repainting this tank method is ideal, removing all grit and dirt. Also, clean parts facilitate repairs.



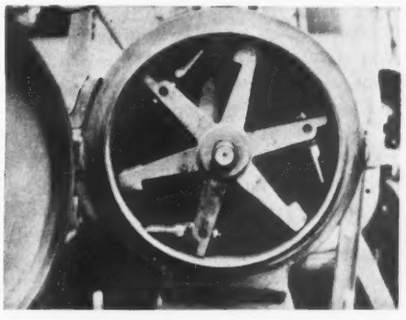
WHAT ARE YOUR FAVORITES?

Every operating man develops favorite ways of doing routine jobs of maintenance or repair, that save him time or money. Share yours with men in other plants by sending them in to this department of FOOD INDUSTRIES, with photos or sketches, if possible. For every "kink" of this type used, FOOD INDUSTRIES will pay $3 or more.

Quick-Change Freezer Blades

An idea for quick changing of ice cream freezer blades is shown in the accompanying photo. Originally, the blade hinge pins were sweated in securely at both ends of the dasher body. To remove the blades it was necessary to remove the dasher assembly, reassemble with sharp blades, and reenter it to the gear drive at the rear of the freezer barrel.

To overcome this lengthy procedure, we marked the pins, to a matched position, drilled the body arms and pins for $\frac{1}{4}$-in. bolts, and abandoned the sweating. Now blades



can be changed swiftly by simply removing the bolts and hinge pins. Marking, done with a small, sharp chisel on pin ends and adjacent dasher arms, can be faintly seen in the photograph.

BILLIE BURGAN, *San Diego, Calif.*

Gasoline Car Mover

A large canning plant which formerly used hand-operated movers to get carloads of raw material in position for unloading has made very good use of a second-hand gasoline hoist. A cable was run from the hoisting-engine drum through a snatch block, anchored near the track and fastened to the car. A few judicious applications of the hoisting-engine clutch would move the car into position, eliminating a great deal of back-breaking labor and lost production time.

The hoisting engine was a 10-hp. unit with an 8-in. hoisting drum and used a $\frac{5}{8}$-in. cable. In three packing seasons, the unit moved approximately 300 cars with no appreciable maintenance cost.

SAMUEL HENRY, *Sandusky, Ohio.*

IN THE CURRENT OF EVENTS . . .

- *Official Washington speaks at AGMA meeting*
- *Bottlers find code big help, but not perfect*
- *Milk code buried under avalanche of objection*
- *AMA will reward technical merit in packages*
- *General Foods recognizes old-age obligations*

Richberg, Davis and Riley Speak At AGMA Meeting in New York

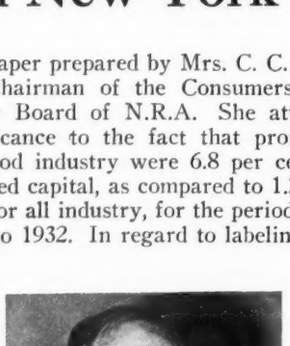
Food manufacturers attending the New York convention of Associated Grocery Manufacturers of America, Nov. 20-22, got a well-rounded picture of the New Deal problems of their industry, both from the viewpoint of the trade and of officials in Washington. And they also were enlightened by comments from a consumer representative and economic experts.

The various food industries were urged to line up under the basic manufacturing code by representatives of the food distribution associations, by Administrator Armin W. Riley and by Paul S. Willis, A.G.M.A. president. That there should be unified operation of the industry under common fair-trade practices and labor conditions was an opinion concurred in by H. C. Petersen, National Association of Retail Grocers; T. B. Terry, National-American Wholesale Grocers' Association; William M. D. Miller, National Retailer-Owned Wholesale Grocers; and C. H. Janssen, National Food and Grocery Distributors' Code Authority.

Disclosing that N.R.A. approval of "eight or ten" applications by food industries for operation under the basic code was pending, Mr. Riley said that uncodified industries can obtain nothing by holding out for individual codes that they can't get under the basic pact. He explained, however, that, where necessary to conform to specific conditions within an industry, suitable modification would be made in the basic code. Discussing the administration's policies, Mr. Riley made it plain that his division intends to give the food industries the widest possible latitude in governing their own operations.

Mr. Terry, in addition to boosting the basic code, asked maunfacturers selling to the wholesale and retail trades simultaneously to add the 2 per cent labor mark-up to their wholesale prices, as required in the wholesalers' code. Evaporated milk manufacturers, he said, had adopted this mark-up.

Price fixing by the food industries was criticized as unfair to consumers in a paper prepared by Mrs. C. C. Rumsey, chairman of the Consumers' Advisory Board of N.R.A. She attached significance to the fact that profits in the food industry were 6.8 per cent on invested capital, as compared to 1.79 per cent for all industry, for the period from 1929 to 1932. In regard to labeling, she said: "Frankly, we want grade labeling."



DONALD R. RICHBERG
Urges self-rule, permanent N.R.A.

Donald R. Richberg, executive director of National Emergency Council and the most important personage in the Recovery Administration, urged self-regulation by industry under a permanent N.R.A., with a minimum of legislative control. He presented four planks which he believes will be incorporated in a reorganized N.R.A. These are: (1) fixing of minimum wages and maximum hours; (2) elimination of dishonest business practices; (3) exact reports of production, prices, wages, employment and general economic conditions; and (4) freedom of agreement between employers and employees.

As a parting shot he delivered this warning: "Now is the time when private enterprise should undertake to lift the burdens of unemployment from the shoulders of the government. Now is the time to build private enterprise anew upon sounder economic foundations than have been laid."

The big hit of the convention was a talk by Lionel Edie, of Edie-Davidson, Inc. Principles espoused by him struck a warm spot in the hearts of many of the delegates. He advocated a hands-off policy on the part of government and suggested an eleven-point profit platform. He also warned that there was danger of the government's attempting to control the food industry as it has public utilities and railroads. To indicate what was happening to profits, Mr. Edie pointed out that, although the 1934 level of business will be only 25 per cent below the five-year average before the depression, profits for the year will be about 65 per cent below the pre-depression level.

Important among the problems brought up was that of labeling. Frank Gerber, chairman of the canning industry's labeling committee, and E. B. Cosgrove, also of the committee, scored the alphabetical system as impractical. Descriptive labeling, they say, is the answer to the need for more informative labeling. T. B. Terry, National-American Wholesale Grocers' Association, agreed with the canners that descriptive labeling is much preferable to the ABC method proposed by the administration.

Chester C. Davis, A.A.A. administrator, indicated what would be sought in the way of amendments to the Agricultural Adjustment Act. He said that it was desirable to give the A.A.A. authority to establish quotas in the purchase and sale of food products and to have defined more clearly the extent to which the government has access to the books and records of corporations. In answer to other questions, he remarked that the A.A.A. does not want the power to pass upon advertising media nor to administer grades and standards for food products.

Charles Wesley Dunn, general counsel for A.G.M.A., predicted sweeping changes in the Food and Drug Act. The proposed new food bill, he said, had serious defects, despite the revisions of last year. He mentioned in particular the provision that food be labeled to disclose all its ingredients, described by their common names and stated in order of their predominance by weight.

Several important resolutions were adopted by the A.G.M.A. In these the association pledged its support to President Roosevelt; recognized the importance of unemployment relief through private employment; favored legislation to continue, for a limited time, those provisions of the National Industrial Recovery Act outlawing child labor, fixing maximum hours and minimum wages and eliminating basic unfair trade practices. The association, however, opposes the 30-hour week. In additional resolutions, the A.G.M.A. favored further investigation of the problem of employment reserves and supported constructive revision of the Food and Drug Act. asking that the new law bar false and deceptive advertising. Other resolutions

CHESTER C. DAVIS
Explains future A.A.A. policies

opposed any A.A.A. amendment which would give the Secretary of Agriculture power to impose a license upon any food industry and upheld the profit motive in business. The association also went on record as opposing A B C labeling and indorsing descriptive labeling.

The A.G.M.A. members reelected Paul S. Willis as president. Other officers are R. L. James, Libby, McNeill & Libby; James F. Brownlee, General Foods Corp., and Ralph S. Stubbs, American Sugar Refining Co., vice-presidents; and H. D. Crippen, Bon Ami Co., treasurer.

Codes Will Be Enforced

The widespread impression that the new N.R.A. Administrative Board has been thus far only wallowing in its own confusion is proved incorrect by the prompt official recognition that compliance is N.R.A.'s biggest problem. In the old pre-board days, many important officials never did recognize this fact.

Legal arms of the government have in the past been lukewarm in aiding N.R.A. enforcement. Now N.R.A. compliance officials are completing cases and urging action. The National Labor Relations Board, convinced that the Blue Eagle is worthless as a compliance instrument, wants court action equally badly.

Technical Merit Will Win AMA Package Awards

Achievements in technical phases of packaging will be accorded signal recognition this year for the first time. The recognition takes the form of "Awards for Distinctive Merit in Technical Packaging Development," a new series of awards established by American Management Association. In judging packages entered in this new competition, the jury of award will base its decision on following factors: Advance in engineering technique, advance in mechanical design, application of a new process, utilization of a new material and enhanced protection of contents.

The number of types of packages for which the new "technical merit" awards will be made will not be determined previous to the judging, since there is no way of knowing beforehand how many entries there will be nor into what classifications they will fall.

As in the past, recognition will be given excellence in package design from the standpoint of appearance, this taking the form of the Irwin D. Wolf trophy and "Awards for Distinctive Merit in Packaging Design." The latter awards correspond to the "Honorary Awards" previously made and will be given in fifteen classes of containers. The Wolf trophy is the supreme award in this competition.

The competition will be held in connection with the annual packaging exposition, scheduled for March 5-8, at Chicago. Entries must be received before Feb. 4. Entry blanks may be obtained from Packaging Awards Administration, American Management Association, 232 Madison Ave., New York, N. Y.

Processing Taxes to Stay

Processing taxes will be retained until a better method is found to obtain a farm parity income. This is the picture painted by Chester C. Davis, A.A.A. administrator, of the determination of A.A.A. to continue the levies against food manufacturers processing basic commodities. Speaking before Millers' National Federation in St. Louis, he said that the farmers were entitled to a fair share of the national income and that the processing taxes were an attempt to give them that.

Under the corn-hog control program for 1935, a processing tax of $2.25 a hundredweight continues on pork.

90% for Codes on Showdown

Delegates of 23 industries attending the recent durable-goods conference in Washington were loud in their complaints of N.R.A., but when it came to a vote on the question of codes versus no codes they voted unanimously for codes and went strongly on record in favor of the principles of N.R.A.

This is typical of the recently expressed attitude of other industries. It demonstrates that it is not safe to take for granted that industries are opposed to N.R.A. just because there is an abundance of complaint. On a showdown it appears that at least 90 per cent of industry is for continuance of codes.

Acts on Dual Code Levies

Definite action by N.R.A. on the problem of dual assessments of industry for code budget upkeep is clearly indicated by two broad attacks launched recently. Representatives of 23 durable-goods industries in a meeting in Washington appointed a permanent committee to function within N.R.A. on this and other inter-industry problems.

Immediately thereafter, the Recovery Administration named three of its deputies to survey code administration in fifteen key cities of the country, with the assessment problem on the agenda.

An old N.R.A. order still in effect provides that a company shall pay an assessment only to the support of the code under which it does the major part of its business. However, N.R.A. granted numerous exceptions, and some industries divide their payment among dozens of codes.

Dairy Industry Opposes Code; Changes Made in Existing Pacts

Patiently waiting for more food manufacturing industries to sign up under the basic code, N.R.A. has ben ironing out kinks in existing pacts and holding hearings on proposed ones. It has tackled the task of putting the five-billion dollar fluid-milk industry under a labor code, and the proposed pact came up for a public overhauling Nov. 20.

But the fluid-milk industry will have none of the code, the dairymen being practically unanimous in their opposition. Representatives from all parts of the country testified at the hearing that their companies would go broke if wages were increased, and that anyway the code could not possibly be enforced. As a matter of fact, International Association of Milk Dealers, which technically is sponsoring the code, considered the hearing merely as an opportunity to demonstrate that the idea was not sound.

It is the contention of the industry that to pass further costs on to the consumer is not possible if the present consumption level is to be maintained. A decrease in the price to producers, of course, would not be tolerated. One of the difficulties of enforcing such a code lies in the fact that of the 104,781 milk routes in the United States, 45 per cent are operated by farmer distributors. Furthermore, there are thousands of one-man establishments keeping no books and employing no help. Still another objection is that retail grocery stores, an important factor in milk distribution, would be untouched by this code, falling under the more liberal retail code. Anyway, the industry says, there is no need for a code, as employment exceeds the 1929 peak.

The principal provisions of the code are a 40-hour week for office help and a 48-hour week for other employees except driver-salesmen, who may not work

more than six days a week. Pay for office help ranges from $14 to $16 a week; that for other employees, 35c. to 45c. an hour; and for driver salesmen, $20.50 to $32.50 a week.

Among changes affecting existing codes is the approval, granted Nov. 20, of rules covering the mutilation of returned products of the baking industry which are to be resold for other than human consumption. These specify that wrappers be removed, sliced products be made to fall apart and unsliced products be broken at least in half.

Administrator Armin W. Riley announced an interpretation of the premium provisions of the macaroni code on Nov. 9, ruling that the giving of premiums in exchange for a stated number of designs cut from macaroni containers does not constitute a violation of the code.

By order of the Federal Alcohol Control Administration, the wine industry was placed under a temporary general permit, effective Nov. 20. Members of the industry must file with F.A.C.A. before Jan. 1, an application for a permanent individual permit. This permit system is provided for in the code.

Two stays of provisions of the salmon canning code have been granted by N.R.A. One extends until Dec. 31 the period during which the canners may sell products under a guarantee against price decline. The other extends until Jan. 15 the time in which the code authority must submit recommendations for minimum compensation for employee fishermen.

N.R.A. announced Nov. 15 that the clam canners were exempted from the basic fishery code and the New England fish and shellfish wholesaling and preparing code. Another change affecting the fishing industry was the withdrawal of the order restricting production in the Atlantic mackerel fishing industry, demands for salting and freezing having made inadequate the limit of 2,200,000 lb.

A code for the soya-bean products industry will come up Dec. 6.

Pays for Peanut Diversion

As a means of balancing the supply of peanuts for shelled goods with the effective demand for these goods, the A.A.A. has agreed to pay manufacturers of peanut oil for diverting farmers' stock peanuts into the manufacture of oil instead of other commercial channels. As modified on Nov. 15, the schedule of payment to millers is $16 a ton for peanuts of the Virginia type, $10 for those of Spanish type and $6 for those of the Runner type. Another change in the rate may be made around Jan. 1, these alterations being necessary to keep in step with market conditions. The payments are to be passed on to the producers in the form of higher prices.

CONVENTIONS

DECEMBER

3-8—National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

4—American Association of Creamery Butter Manufacturers, annual Palmer House, Chicago. W. F. Jensen, 110 N. Franklin St., Chicago, secretary.

5—National Dairy Council, Palmer House, Chicago, Ill.

17-19—American Honey Institute, annual meeting and exhibit, Valdosta, Ga. Malitta F. Jensen, Commercial State Bank Building, Madison, Wis., secretary.

JANUARY

14-18—National Preservers' Association, Stevens Hotel, Chicago, Ill. Daniel R. Forbes, 839 17th St., N.W., Washington, D. C., secretary.

14-18—National Canners' Association, convention and exposition, Stevens Hotel, Chicago, Ill. Frank E. Gorrell, 1739 H St., N.W., Washington, D. C., secretary.

15—Southeastern Millers' Association, annual, Brown Hotel, Louisville, Ky. Gustave Breaux, 30 U. S. Trust Bldg., Louisville, secretary.

16—National Pickle Packers' Association, Palmer House, Chicago, Ill. Frank D. Gorsline, 105 West Adams St., Chicago, secretary.

16-17—New England Association of Ice Cream Manufacturers, Copley-Plaza, Boston, Mass. W. P. B. Lockwood, 51 Cornhill, Boston, secretary.

Meat, Butter, Milk, Cabbage Among Relief Purchases

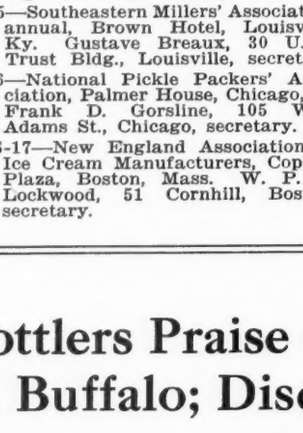
Despite earlier indications that purchases of relief meat by Federal Surplus Relief Corp. were drawing to a close, contracts for the processing of 430,500 additional head of cattle and 207,390 more calves from the drought area were announced on Nov. 6. And on Nov. 23, Secretary Wallace said the A.A.A. planned to buy another 1,500,000 head of drought cattle. Increasingly acute conditions are said to threaten thousands of animals with starvation.

Meanwhile contracts have been awarded for other commodities. On Nov. 7, F.S.R.C. announced awards of contracts to can 1,098,000 sheep from the drought area, and on Nov. 21, bids were opened for 9,000,000 lb. of powdered skim milk, a large part of which was to be packaged in 1-lb. cartons. And contracts have been awarded for 5,040,000 lb. of butter.

Using federal funds, the State temporary emergency relief administration of New York has announced that it will buy about 50,000,000 lb. of cabbages from the surplus crop in the State. Of this, 17,500,000 lb. will be distributed in New York.

Bottlers Praise Code at Meeting In Buffalo; Discuss Problems

Bouquets were profuse and brickbats few for the N.R.A. at the convention of the American Bottlers of Carbonated Beverages, in Buffalo, Nov. 12-16, which was attended by more than 3,000 bottlers from all parts of the nation.



THOMAS MOORE
New president of A.B.C.B.

It seems that the code for the industry, signed last June, is solving some old problems, particularly that of securing a deposit for bottles, and the labor provisions are expected to curb chiselers and bring about greater price stability. Prices remain the chief headache.

Troubles of the industry were brought out in an open forum on the code. Nonpayment of dues to the code authority is the first problem of enforcement, and it will be considered as serious as any other violation of the code. The definition of a quantity buyer, who is entitled to a discount, is another troublesome factor. The only yardstick to measure a quantity buyer are the conditions in the local community.

While the code prohibits bottlers from giving coolers and other equipment to the trade as a form of price concession, some, it is said, are giving the equipment to an ice man who, in turn, gives it to the retailer.

Bottlers were told that apparently there is no relief to them from chain stores which manufacture their own bottled goods. The chains, however, are subject to the same rules regarding hours of labor and rates of pay, and this, it is thought, will tend to prevent them offering beverages much lower at retail than the dealer supplied by the bottler.

There appears to be no relief in cases where a small bottling firm uses modern machinery and allots the little manual work required to the executives, who are exempt from the labor regulations. Some of these firms are said to produce in one day enough to keep them busy the rest of the week in selling it.

Hope was expressed at the meeting

that some definite price stabilization plan will be developed as code work becomes more highly developed, and it was indicated that the question of what is destructive price cutting will be worked out as the local committees begin to function more actively.

Dr. Walter H. Eddy, Columbia University, admonished the bottlers not to forget that their chief function was to make drinking water pleasant. He criticized those who sell beverages, originally intended as a means of quenching thirst, as a health stimulant, for the reason that sales tend to become limited to those suffering from some malady.

Julian H. Toulouse, research director of the A.B.C.B. laboratory, presented two papers that were packed full of practical production pointers for the bottlers. These covered the maintenance of beverage quality and uniformity and syrup making and its control. Mr. Toulouse pointed out that bottlers produce a non-uniform product because of variable syrup throw, variable composition and variable bottle size. And he said that every bottler should check at intervals the gas volume, sugar content and either filling height or net content of his finished products.

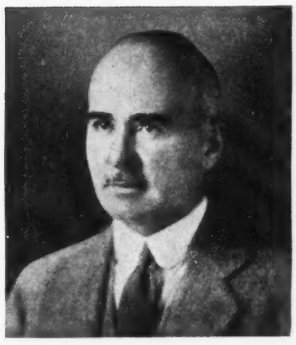
W. E. Fletcher, transportation engineer, Fruehauf Trailer Co., speaking on "lowering cost of deliveries," strongly recommended the use of semi-trailers powered by 1½-ton tractors. One man with a semi-trailer, he said, many times can handle a route which previously had been covered by two small trucks.

Max Levine, department of bacteriology, Iowa State College, presented papers of value to production men on practical bacteriology and bottling-plant sanitation and bottle washing and sterilization of plant equipment. Taste, odor and alkalinity control in modern beverage-water purification was the subject of a talk by F. J. Lammers, International Filter Co., and how to train route salesmen was the theme of an address by James C. Lee, Buffalo Rock Co. Alfred Schneier, of the company bearing his name, covered siphon bottling, and Myron C. Hess, S. Twitchell Co., discussed carbonated sparkling waters.

The bottlers elected Thomas Moore, Minneapolis, president to succeed Martin L. Schmidt. Other officers are J. B. O'Hara, Dallas, vice-president; I. M. Oberfelder, Baltimore, treasurer; and James L. Oliver, secretary.

More Milk Licenses

While courts in the various milk-marketing areas are rendering a galaxy of decisions as to the validity and constitutionality of milk control laws, new licenses are going into effect, and old ones are being amended. During the first part of November, licenses were issued for Topeka, Phoenix and Atlanta.



J. B. O'HARA
Bottlers name him vice-president

Licenses recently amended to increase the price to producers include those for the Omaha-Council Bluffs territory, Grand Rapids, Lansing, Muskegon, Evansville (Ind.) and Sioux City. The license for Tulsa was revised to place the price upon a butter-fat instead of a hundredweight-of-milk basis, but this did not alter the rate. Contrary to the general trend, the license in the St. Louis market was changed so as to reduce the price to producers.

Federal Judge Restrains Chicago Milk License

Neither Congress nor the Secretary of Agriculture has any authority to control milk production, according to Federal Judge John P. Barnes, who, on Nov. 21, issued a permanent injunction restraining enforcement of the milk license in the Chicago area. This decision would seem a severe blow at the validity of the Agricultural Adjustment Act, but the case is to be taken before the Supreme Court, and quite likely the decision will be reversed.

On Nov. 5 the Supreme Court held that minimum price-fixing under the New York State milk control act is constitutional, the conclusion of the court being unanimous. Two weeks later, a special federal statutory court declared the New York law unconstitutional on the ground that it is in restraint of interstate trade. The court made permanent an injunction against the regulations designed to protect the dairymen against being undersold by dairymen who ship loose milk into New York from other States. This case will be taken before the Supreme Court.

PROMOTING THE PRODUCT

California vinters have formed a wine institute to promote their business. After steps have been taken to improve quality, the wine will be advertised nationally.

Adolf Gobel, Inc., has distributed to housewives a 16-page booklet, "Hospitality Suggestions," containing recipes and hints on table settings.

United Prune Growers of California is distributing to 120,000 physicians and 10,000 institutional dietitians a pamphlet on the dietetic values of California prunes.

Roquefort Association, Roquefort, France, is promoting its cheese in America by newspaper advertising and a twice-weekly musical broadcast over the Columbia network.

Burkhart & Son Packing Co., Grand Rapids, Mich., manufacturers of maraschino and glacé cherries, recently demonstrated packaging methods in the lobby of a bank in Grand Rapids.

American Wines Co., St. Louis, plans a newspaper advertising campaign in 40 cities during the holiday season.

Pet Milk Co., will launch a new advertising campaign featuring its vitamin D milk, using weekly inserts in 200 newspapers.

Libby, McNeill & Libby is starting a national campaign on its new homogenized baby food.

Pompeian Olive Oil Corp. reports outstanding success with a combination offer comprising a recipe box and a 4-oz. container of olive oil.

George A. Hormel, Inc., Austin, Minn., has launched an important newspaper campaign on vegetable soup in a dozen large cities.

Swift & Co. has a tie-up with I.G.A. whereby it suggests, through a merchandising calendar, the meats to be advertised by the stores.

Borden's Eagle Brand condensed milk will be featured in a dramatized program of household advice over the Columbia network once a week.

General Foods Corp. has renewed until the middle of February its contract on the "Little America" broadcast.

Phillips Packing Co. is delivering a full-sized can of soup to 150,000 homes in Philadelphia, a copy of the company's house-organ being given with each can.

Salada Tea Co., Boston, will continue on a larger scale in 1935 its "tea for breakfast" theme in newspaper ads.

Institute of American Fats & Oils, Washington, D. C., is distributing a booklet, "The Wholesomeness and Food Value of Margarine."

Balboa Brewing Co., Los Angeles, has been entertaining distributors and the public five nights a week at its new million-dollar plant, furnishing a dance orchestra and free beer.

Salmon packers are planning a three- or four-year advertising campaign, starting next spring.

General Foods Adopts Old-Age-Income Plan

Security in old age through a fixed monthly income after retirement is provided employees of General Foods Corp., New York, by a cooperative annuity plan announced Nov. 19.

Joint contributions by the corporation and the employees will finance this old-age "insurance." For example, an employee 30 years old, earning $35 a week, will contribute toward the plan $1.84 forty-eight times a year, and his payments will be matched by the company. If he has the same earnings until retirement, his old-age income will be $112 monthly. An employee may expect to enjoy a retirement income equivalent to two per cent of his average earnings for every year of his participation in the plan.

Women will be retired at 60 and men at 65, although retirement then is not obligatory. And, with the company's consent, employees may elect to retire with a reduced rate of income at any time within ten years of the customary retirement age.

Workers participating in the plan—it is optional—may, if they leave the corporation, have their contributions returned or leave them with the insurance company as a paid-up annuity. If they have participated for fifteen consecutive years, they can, by leaving their own deposits with the insurance company, obtain the retirement income. If an employee wishes, he can arrange his policy so that payments, in reduced amounts, will be continued during the lifetime of a designated dependent.

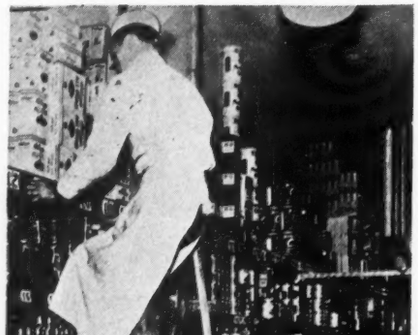
This old age insurance program of General Foods affects workers in 45 plants and 29 sales divisions and districts throughout the country.

Defines Shrimp Grades

Having completed investigation of grade-size designations commonly employed in the labeling of canned shrimp, the Food and Drug Administration has arrived at a set of definitions. Canned shrimp labeled "extra large" should run four or less shrimp to the ounce; "large," four or five to the ounce; "medium," five or eight; and "small," eight or more. These weights are applicable to the blanched shrimp as they come from the grading machine. They are not applicable to shrimp ungraded for size. Although the Food and Drug Act does not require canned shrimp to be labeled with grade sizes, these definitions are to be observed in all cases where sizes are shown on the label.

The administration also announces that the term "salad shrimp" is improper for use on broken shrimp, the correct label for this product being "broken shrimp," or "pieces of shrimp."

These provisions are applicable to all canned shrimp.



A. & P. MOVES IN AGAIN

After the labor unions and Great Atlantic & Pacific Tea Co. agreed to the peace plan proposed by National Labor Relations Board on Nov. 4, the company restocked and reopened the 293 "red front" stores which it had closed in Cleveland Oct. 27. A. & P. agreed to allow collective bargaining, permit employees to affiliate with any union and to settle future labor troubles by arbitration. The terms have been considered a victory for labor, since it may now organize the company's employees.

HORS D'OEUVRES

MUCH is being accomplished by N.R.A. in the way of internal reorganization. It now is possible to get an answer to a letter written to it.

•

FREE CANDY for children is banned by the code for wholesale confectioners. We've heard N.R.A. accused of all sorts of things, but we never thought it would take candy from a kid.

•

AN ENTERPRISING Atlanta dairy, which sells milk from bovines "milked in marble halls," recently capitalized on the local appearance of a Mae West film. One of its ads, which pictured a sprightly cow, carried the caption, "I'm no angel, but I'm pure."

•

GOAT'S MILK scored at the New York State Agricultural Experiment Station compared favorably with cow's milk. We wonder if the score card had a column for "odor."

•

A "LIBRARY OF WINES" has been established by Julius Fischer, Inc., New York. Bottles of all good wines, both foreign and domestic, will be kept on the shelves. Unfortunately, it is not a circulating library.

•

HERE'S AN IDEA for food plants with spare refrigerated space. Amherst Apple Cold Storage Co. completed a new cold-storage plant this summer, but had nothing to put into it until fall. So it hired itself a band and broadcast the slogan, "Just a Dance in the Apple House." Business was good.

Federal Sewage Control Seen as Possibility

Regulation of the depositing of industrial wastes in the rivers, lakes and coastal waters of the country may be made the subject of federal legislation in the not so distant future, according to present indications.

Administration advisers interested in conservation are urging that such a move be made. They are reported to have a favorable audience in the President, and it may be pushed by him in his program for conservation of natural resources. Just how far the federal government could go beyond controlling such disposals in navigable bodies of water remains in doubt.

At present, through the food and grocery division, N.R.A. is conducting a drive seeking cooperation of industrialists in reducing pollution of streams, rivers, lakes and coastal waters.

Until the results of this N.R.A. drive are realized, the move for federal legislation probably will remain dormant.

New Code Appointments

An executive committee for the New England fish and shellfish preparing and wholesaling industry and a trade-practice complaints committee for the cocoa and chocolate manufacturing industry were approved during the past month by N.R.A. The Recovery Administration also accepted the appointment of G. W. Sharpe, Beech-Nut Packing Co., as a member of the Coffee Industries Committee. The following are the committees:

NEW ENGLAND FISH AND SHELLFISH
(Executive Committee)

Alfred Henry, Henry & Close, Boston; F. McG. Bundy, Gorton-Pew Fisheries Co., Ltd., Gloucester; Joel Lamere, Bay State Fishing Co., Boston; Patrick J. O'Hara, O'Hara Bros., Inc., Boston; Fred Grant, Chas. F. Mattlage & Sons Co., Gloucester; John Nagle, John Nagle & Co., Boston; David F. Choate, P. H. Prior Co., Boston; B. C. Collins, J. A. Stubbe Co., Boston; and Francis J. O'Hara, Jr., Atlantic & Pacific Fish Co., Boston.

COCOA AND CHOCOLATE
(Complaints Committee)

John A. Bachman, Bachman Chocolate Mfg. Co., Mount Joy, Pa.; Wellington S. Crouse, Hershey Chocolate Co., Hershey, Pa.; Clive C. Day, Peter, Cailler, Kohler Swiss Chocolates Co., New York, Walter C. Drury, Schall Candy Co., Clinton, Iowa; Ernest D. Fioux, Runkel Bros., Inc., New York; Alfred Ghirardelli, D. Ghiradelli Co., San Francisco, Calif.; Wallace T. Jones, Rockwood & Co., Brooklyn; Thomas E. Hardenbergh, administration member, New York.

A XMAS REMINDER

Although contributions to its cause have decreased during the past few years, National Tuberculosis Association is faced with increasing demand for the many types of free health service which it renders the public. It is now launching the annual Christmas seal sale, and it hopes the returns will permit it to restore, at least partially, the services it has been forced to curtail.

Wholesale Margins on Milk Surveyed by AAA

More light on milk margins comes from the A.A.A. in a review of distributors' gross margins in 50 markets. In markets where there exists a differential between the wagon price and the store price, the distributors' average gross margin on wholesale sales amounted to 3.7c. per quart and ranged all the way from 2.67 to 4.95c. In markets without a differential, the average gross margin on wholesale sales amounted to 4.23c. per quart, and the range was between 2.89 and 6.62c.

Selling margins for stores in markets having a differential between wagon and store prices ranged from 0.5c. to 2c. per quart, while in markets with differentials, the range in selling margins was from 1 to 3c. a quart. Among the cities having a differential in price, San Francisco had the lowest wholesale gross margin to dealers, while Cincinnati was highest. Of the markets with no differential, the Quad Cities, of Illinois and Iowa, had the lowest wholesale gross margin to dealers, and Greensboro, N. C., the highest.

Names Best Cider Apples

"In this country, too little thought is given the selection of the proper varieties of apples for making cider." That is the opinion of Prof. W. F. Walsh, chemist at the New York State Agricultural Experiment Station, who has classified some of the common varieties with respect to their cider-making quality. The value of an apple for cider making depends largely upon its chemical composition, particularly acid and tannin content, he says.

Among the varieties which he lists as giving good cider, either straight or blended, are: Baldwin, Northern Spy, Winesap, Rhode Island Greening, Golden Russet, Wealthy, Wagener, Jonathan, Hubbardston, King, Grimes Golden, Canada Red, McIntosh, Delicious, Golden Delicious, Roxbury Russet, Winter Banana and White Pearmain.

Varieties from which a good cider cannot be made, when pressed alone, include: Rome Beauty, Northwestern Greening, Duchess, Yellow Transparent, Alexander, Wolf River, Red Astrachan, Maiden Blush, all crab varieties, Ben Davis, Black Ben, Stark, and Gano.

In many cases varieties of the last group may be blended with those of the first group to make an attractive cider.

What Codes Cost

Four divisions of the fishing industry have submitted code expense budgets to N.R.A. within the past month. The Great Lakes fishery industry applied for a budget of $6,715.55 for the period from Aug. 9 to March 31. The California sardine-processing industry has budgeted its code cost at $36,327.21 for the period from April 1, 1934, to May 6, 1935. The Northwest and Alaska fish-processing and wholesaling industry put its budget at $1,991.03 for the period from Aug. 31 to Nov. 30, 1934. The South middle-Atlantic fishing industry submitted a budget of $4,865.62 for the period from July 28 to Dec. 31, 1934, plus $1,621.88 to be paid to the fishery industry code authority.

Prize Candy Men Organize

Their business having been declared illegal by the government, manufacturers of "break and take" confectionery are consolidating their forces for a drive to lift the ban. Under the guidance of Irving H. Fathschild, attorney, they are enlisting in Prize Confectioners' Association, recently formed at Chicago. Walter H. Johnson, of Walter H. Johnson Candy Co., Chicago, has been named to the board of directors of the new organization, as have M. J. Holloway, M. J. Holloway Co., Chicago, and H. S. Martin, Queen Anne Candy Co., Hammond, Ind.

CONCENTRATES

Revision of the Food and Drug Bill before it is reintroduced in the 74th Congress was promised by Senator Copeland on Nov. 9, but he did not say in what way it would be changed. . . . The question of brokerage payments in the food field, over which a battle has been fought backstage in N.R.A., is still pending.

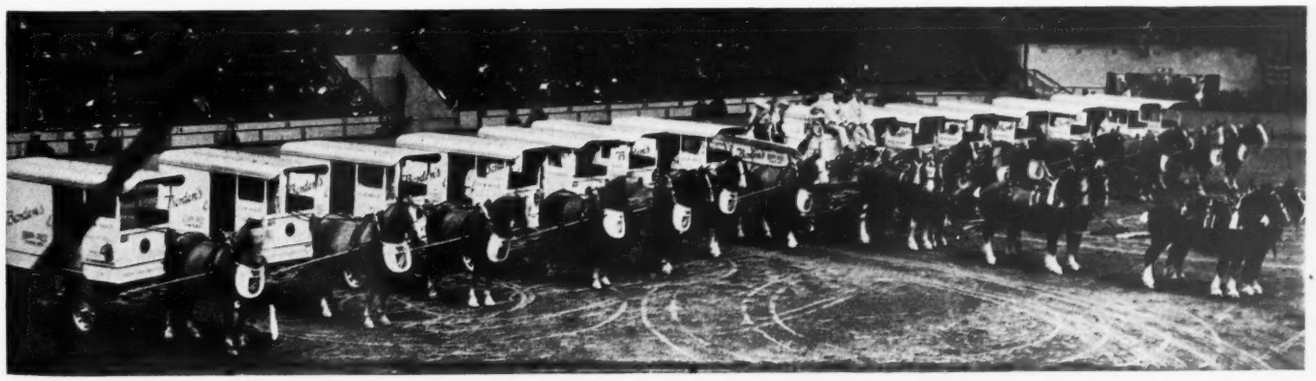
The canners' convention, at Chicago, Jan. 14-18, will be a 50th anniversary get-together; more than 90 exhibitors already have signed up for the exposition. . . . Southwest Independent Meat Packers' Association has been formed with eighteen members. . . . In Argentina, the government has assumed control of the meat-packing industry, and packers refusing to open their books are being heavily fined or jailed.

Many food manufacturers who exhibited at A Century of Progress report increased sales. . . . The cheese industry in New York State has indorsed the establishment of official grades for its Cheddar and washed-curd cheeses. . . . Connecticut milk dealers made a net profit of $0.0009 a quart for the first half of 1934.

A chain of cooperative processing plants, including meat and vegetable canneries, is planned in Florida to relieve unemployment.

There is practically no difference in the vitamin D content of fresh and canned orange juice, according to experiments at the University of California. . . . A vacuum-packed baking powder has been introduced by Rich Maid Manufacturing Co., Richmond, Va.

A new process for producing oxalic acid by treating corncobs with nitric acid and caustic soda has been perfected at the Engineering Experiment Station, Iowa State College. . . . India offers a promising market for canned and powdered milk.



MODERNIZED MILK WAGONS MAKE SPECTACULAR DÉBUT

Before going on their delivery routes in New York, sixteen pneumatic-tired milk wagons of Borden Co., drawn by rubber-shod horses, put on a demonstration at the National Horse Show, Nov. 7-13. A six-horse team from Borden's Columbus branch also was on hand. The pneumatic-tired wagons, with soft-pedaled horses, are 90 per cent less noisy than their predecessor. And, mounted on ball bearings, they roll more easily. Furthermore, the new wheels lower the floor of the wagon by 8 in. and the tires reduce the wear and tear on the vehicle. As a means of warning pedestrians, Borden's silent wagons are equipped with horns which make an appropriate "mo-o-o-o" sound.

MEN . . . JOBS . . . AND COMPANIES

Industry

ALAMITO DAIRY, Omaha, is using pneumatic-tired milk wagons and rubber-shod horses on lighter and shorter routes. Trucks carry the milk on longer and heavier hauls.

BEATRICE CREAMERY CO., St. Louis, has purchased the ice cream accounts, cabinets and trucks of Baden Ice Cream Co., a firm with an annual production of over 30,000 gal.

CAROLINA COCA-COLA BOTTLING CO. will build a new plant at Chester, S. C., which will double its production facilities there.

CHAPMAN'S ICE CREAM CO., Los Angeles, has entered the wholesale field, reducing the number of retail outlets from 32 to 19.

COLUMBUS (WIS.) FOODS CORP. plans to put up an experimental pack of peas at McAllen, Texas, this winter.

CUDAHY PACKING CO. has dropped the local names of its 100-odd subsidiaries, designating them "Cudahy Packing Co."

CUSHMAN'S SONS, INC., recently sold its fourteen retail routes in the Philadelphia area to Freihofer Baking Co. Cushman will continue to operate chain retail outlets there.

EAGLE BOTTLING WORKS, Kansas City, Mo., will build a $100,000 brewery.

GENERAL FOODS CORP., New York, is steadily expanding operations of its frosted-foods division and is now distributing some 50 quick-frozen items through 700 retail outlets in New England and the Middle Atlantic States. Sales of these products have picked up considerably during the first nine months of 1934.

GLIDDEN CO. announces acquisition of exclusive rights to German patents for the manufacture and refining of lecithin. The company has just installed a soya-bean-oil extraction plant and a lecithin manufacturing unit at Chicago.

INDEPENDENT BREWING & MALTING CO., Davenport, Iowa, is to be taken over soon by Independent Brewing Co., a new concern, in which Pfeiffer Brewing Co., Detroit; Southwest Brewing Co., Oklahoma City; and Springfield (Ill.) Brewing Co. are interested.

INTERNATIONAL MILLING CO., Minneapolis, has purchased Greenville (Texas) Mill & Elevator Co. at a reputed price of $300,000.

LAKE SHORE CANNING CO., Sheboygan, Wis., recently was purchased by J. E. DeMaster Co., which will remodel and repair the plant. Peter Ingelse, formerly with Lake Shore, will be in charge of the cannery.

LEWIS PACKING CO. will go into operation in Omaha about the first of the year, having purchased the old Higgins packing plant and arranged for more than $50,000 worth of modernization work.

SANITARY DAIRIES, INC., Houston, Texas, expects to begin operation of a new plant Feb. 1. Modern both in construction and equipment, the plant will have a floor space of 22,100 sq.ft.

SPRECKELS SUGAR CORP.'S petition for reorganization under the new bankruptcy law was scheduled to come up in court Nov. 27. The company, located in Yonkers, N. Y., has been in equity receivership since January, 1932.

STOKELY BROS. & CO., Indianapolis, recently added a line of fancy California fruits to its vegetable and strained baby food line. Chili con carne, spaghetti and tomato sauce are other recent Stokely additions.

STURDIVANT PACKING CO., INC., Brownsville, Tenn., closed in July by a voluntary petition in bankruptcy, has been reopened by J. O. Bomer, who purchased the buildings, equipment and trademarks. The plant will operate under the name of West Tennessee Food Products Co.

WORCESTER SALT CO. recently registered the "Worcester" trademark for peanut butter, condensed milk, mustard, oatmeal, oleomargarine, coffee, butter, rice, soup, spaghetti, sugar, tea and chocolate.

GEORGE WESTON CO. OF CANADA, will open a biscuit and cracker manufacturing plant at Battle Creek, Mich., about Feb. 1.

WILBUR-SUCHARD CHOCOLATE CO., Lititz, Pa., has filed a petition in bankruptcy.

PERSONNEL

WILLIAM A. MISKIMEN

Formerly president and general manager of Illinois Canning Co., he has joined Stokely Bros. & Co., Inc., Indianapolis, as assistant to William B. Stokely, Jr., president. He also is a stockholder and director of Rossville (Ill.) Packing Co. and a member of the code authority for the canning industry.

JAY GOULD

For ten years vice-president and general manager of Best Foods, Inc., New York, he has been elected president of that company to succeed Randolph Catlin, who resigned to devote more time to other business, including the presidency of Gold Dust Corp. Mr. Gould is chairman of the mayonnaise code authority.

FRED J. ANDERS has been promoted from vice-president to president of Pilsener Brewing Co., Cleveland. Joseph T. Chvojan has been named vice-president, and Edward H. Rudolph, treasurer and secretary.

ROBERT H. CABELL, London representative of Armour & Co., has been named head of the company to succeed T. G. Lee, who died recently. Although bearing the title of general manager, he will assume the duties of president.

NOAH COX recently was appointed manager of the ice cream division of Beatrice Creamery Co., St. Louis. He had been manager of the company's Centerville (Iowa) plant.

F. A. DALTON, vice-president and director of the Central Western division of Great Atlantic & Pacific Tea Co.,

GUS G. KINDERVATER

He resigned as head of the ice cream division of Borden Co., New York, effective Dec. 1. Recently reelected president of International Association of Ice Cream Manufacturers, he is a leader in the field. He has not announced future plans.

now has charge of A. & P. business in greater Cincinnati and adjacent territory, replacing E. P. Daly, transferred.

W. L. Davis became manager of the Minneapolis storage plant of Booth Fisheries Co. a short time ago.

A. H. Finnell, formerly manager of the field department of Miller Cereal Mills, Omaha, soon will open a wholesale flour, grain and feed business.

Frank Grafeman has been promoted from sales manager of the St. Louis plant of Beatrice Creamery Co. to general manager of the St. Louis division.

G. Philip Ham, who was general manager and chief chemist of Herco Foods, Inc., New York, now is a research engineer with Agfa Ansco Corp.

George Hedley, until recently head of the chocolate department of Loft, Inc., Long Island City, N. Y., now is connected with E. J. Brach & Son, Inc., Chicago confectioners, in an executive capacity.

John Holmes has been appointed assistant to a vice-president of Armour & Co., Chicago. He previously was manager of the company's Cleveland branch.

Robert C. Huth has been elected secretary of the Charles A. Krause Milling Co., Milwaukee.

James Malloy now is Michigan manager for Carnation Milk Co.'s malted-milk division.

Joseph Miller and John L. Cunningham, of Wichita, Kan., and Julius Radzuweit, of Sioux City, Iowa, have been honored by Cudahy Packing Co. for 50 years of service.

L. N. Murrah was recently transferred from Armour & Co.'s Chattanooga plant to its Oklahoma City plant to take charge of the lard refinery department. He succeeds T. B. Nance, who was transferred to Kansas City.

Albert Rudd has become assistant industrial engineer of the South Omaha Armour & Co. plant. He formerly was in St. Louis.

A. F. Schroeder, Winneconne, Wis., was again chosen president of Wisconsin Canners' Association at its convention Nov. 13.

Frank Slavin now heads up the production activities of Charles R. Adelson Co., Inc., New York confectionery manufacturers. Mr. Slavin previously had served Loft, Inc., Long Island City, N. Y., as factory superintendent.

John B. Stokely recently was promoted to executive vice-president of Stokely Bros. & Co., Inc., Indianapolis. Charles C. Culp was advanced to vice-president in charge of sales; Edward D. Eberts, to vice-president in charge of engineering; Lyle S. Moore, to vice-president in charge of Southern operations; and Charles A. Nugent, to secretary.

J. C. Van Riper, formerly superintendent of the ham house of Armour & Co.'s South Omaha plant, has been made head of the employment department at that plant.

T. R. West, chief chemist for Thomas Page Milling Co., Topeka, Kan., succeeds Ralph Potts as chairman of the local section of American Association of Cereal Chemists.

DEATHS

John D. Adams, 85, director of American Chicle Co., Long Island City, N. Y., and son of Thomas Adams, pioneer chewing gum manufacturer, at Bayshore, N. Y., recently. He was head of American Chicle Co. for a number of years.

Joseph H. Bostock, 47, vice-president and sales manager of Lance Packing Co., Charlotte, N. C., at Charlotte.

Albert A. Chesley, 97, for 15 years superintendent of Old Portland (Me.) Packing Co., at Portland, Oct. 28.

G. J. Edwards, 68, formerly general manager in New York for Swift & Co., at Montclair, N. J., Nov. 9.

John S. Ellithorpe, 70, vice-president and a director of Beech-Nut Packing Co., Canajoharie, N. Y., at Syracuse, N. Y.

Harry E. Grafeman, 51, former president of Harry E. Grafeman Milk Co., St. Louis, before it was purchased by Beatrice Creamery Co. in 1929, at Clayton, Mo.

Fred C. Howard, for nine years chemist of Slade Spice Co., Boston, at Stoneham, Mass., Oct. 23.

William Kroger, 79, one of the

THOMAS G. LEE

Armour & Co president, who died Nov. 6. He became connected with Armour & Co. in 1895 as a rookie stenographer in the beef department. He climbed upward through various executive positions, becoming president in 1931. He was 56.

founders of Kroger Grocery & Baking Co., at Asheville, N. C., Nov. 1.

Prof. Paul F. Nichols, 41, in charge of fruit-drying and dried-fruit packaging investigations at the University of California.

Philip Siegel, 60, president of Siegel-Weller Packing Co., Chicago, in that city, Nov. 5. He was identified with the packing business for 40 years.

Lynn Stroud, 53, for 21 years manager at Swift & Co.'s Dallas (Texas) branch, at Dallas, Oct. 23.

Herbert Zork, 75, secretary-treasurer of San Antonio Brewing Association, at San Antonio, Nov. 12.

Associated Industries

Continental Can Co., Inc., will erect a three-story addition to its plant at Houston, Texas.

Johns-Manville Credit Corp., New York, is now able to finance industrial and commercial repair and modernization work. No down payment is required and amounts up to $2,000 may be obtained for each building involved. Payments are in monthly instalments over a period of from one to three years, the cost of financing amounting to $5 to $100 per annum.

Magnetic Manufacturing Co. has appointed Garrett Burgess, Inc., as its sales representative in the Detroit territory.

National Adhesives Corp. soon will start large-scale production in the $250,000 addition to its main factory at Dunellen, N. J.

Reo Motor Car Co. announces that Mack-International Motor Truck Corp. will sell and service Reo Speedwagons and trucks in twelve cities.

BUSINESS TRENDS

Less Sugar Consumed

For the first nine months of 1934 sugar consumption in the United States was off 3.2 per cent, as compared to 1933, dropping from 4,566,582 to 4,420,474 long tons, raw sugar value, according to a Lamborn & Co., Inc., estimate. Beet sugar accounted for 1,121,631 long tons, an increase of 20.3 per cent above 1933, while cane-sugar consumption decreased 9.2 per cent.

World Hog Supply Lower, Trade Declines

With hog supplies for commercial slaughter at the lowest ebb in more than twenty years, reports from principal hog-surplus countries abroad show declining slaughter. Hog population in all hog-surplus countries has decreased, and a further decrease is looked for during the next six months by the Bureau of Agricultural Economics. Along with this trend goes a reduced world trade in hog products.

In spite of these conditions and the continuing effect of last summer's drought, latest advices from Washington indicate that the A.A.A. still contemplates a restricted corn-hog program, with a 10 per cent reduction below the base period. This means a one-eighth increase in corn plantings over 1934, and a one-fifth increase in the number of hogs, increases falling far short of the normal needs of the market.

What the total effect of these trends on prices will be is yet difficult to forecast, although they are certain to average materially higher. Shortage of hog products in world trade will also obviously influence the vegetable-oil market.

Moisture Still Lacking

Crop prospects for 1935 in the semi-arid belt west of the Mississippi are still threatened by the continued lack of sufficient rains. According to expert opinion, the rains, so far, since the drought broke, have been greatly insufficient to overcome the depletion of subsoil moisture that has extended over several years in much of the region and reached its culmination last summer. B. W. Snow, grain statistician, points out that the wheat crop in this region largely depends upon the rains of the preceding July, August and September, and that in 1934 the rainfall during that period was only 65 per cent of normal for the whole area. October rains this year also were deficient in many parts of this wheat belt. J. B. Kincer, of the Weather Bureau, states that the subsoil moisture is depleted to such a depth that, unless there are good rains this winter, a dry spell next summer would be quickly felt. This same authority considers that there has been no marked improvement in the western part of the drought area, nor in the northern section, and that recent rains further east have been insufficient.

Business Brightens

Despite month-end recessions in commodity prices, business conditions are encouraging.

Large and influential business groups have become quite active in meeting the administration's move for co-operative action to further business recovery. Recession in commodity prices is stimulating greater sales and continued depletion of already too-low stocks is expected to result in extensive buying for stock as well as to meet demands as soon as end-of-the-year inventories are taken. Food prices are considered due for a marked rise as colder weather cuts supply and stimulates demand.

After more than a two months' inactivity following a definite 9-week decline, general business, as indicated by *The Business Week* index, took an upturn of 1.04 per cent for the month ending Nov. 17.

Wholesale prices reported by U. S. Department of Labor had a slight net upturn during the four weeks ending Nov. 10. All commodities advanced 0.26 per cent; farm products, 0.14 per cent; and food, 1.47 per cent.

According to the weighted price index of the New York *Journal of Commerce*, the advance in grain prices equalized the decline in other commodities and held the index for all commodities at a slight increase of 0.26 per cent for the month ending Nov. 24; grains advanced 5.96 per cent; foods moved up only 0.61 per cent.

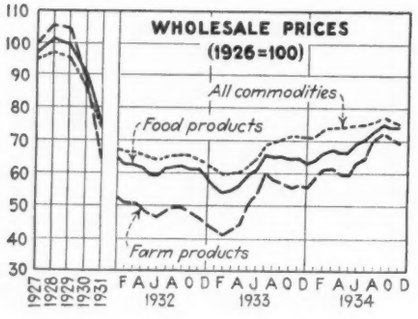
Milk Consumption Gains

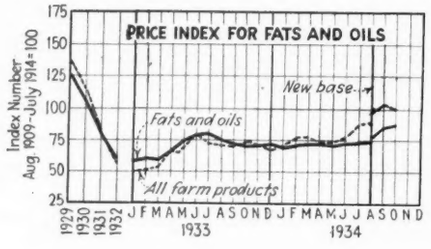
Fluid milk and other dairy products are going into consumption in increased quantities, according to a recent survey of the industry carried out by Dun & Bradstreet, Inc., which shows dollar totals from 10 to 25 per cent over those of a year ago, with unit sales higher. No doubt a considerable factor in this situation is the large purchases of dairy products made by the government for relief and other purposes. At the present rate of these purchases, over 8,000,000 lb. of cheese, 60,000,000 lb. of butter, and corresponding quantities of fluid milk are taken annually for relief alone.

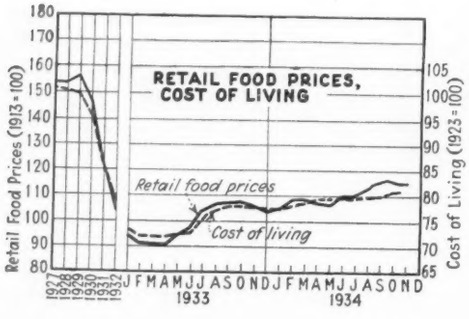
While current production of these products is heavy, statisticians of the U. S. Department of Agriculture look for light production in the coming winter months, because of the decrease in dairy herd numbers, shortage of feed, and low price of dairy products.

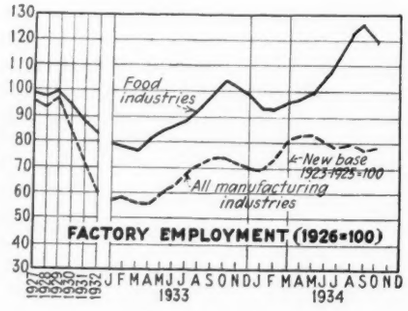
BASIS FOR THE CURVES

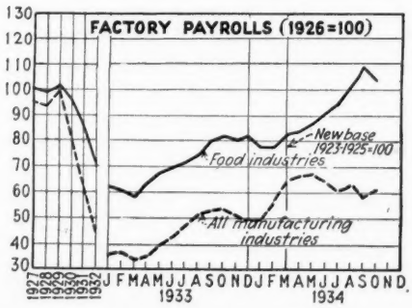
Retail food prices, factory employment, factory payrolls and wholesale prices based on indexes of the Department of Labor. Cost of living index is that of the National Industrial Conference Board. Indexes of prices of fats and oils, and of all farm prices are from the U. S. Department of Agriculture, as are the per cent of parity prices.











Fruit and Vegetable Pack

Now that the current canning season is about over, information is beginning to become available upon which estimates of the total supply can be based. Preliminary figures reported by the Bureau of Agricultural Economics indicated a somewhat larger yield than in 1933, although the total is below the five-year average. New supplies, combined with the unusually small carryover from 1933, give about the average stock of the last four years.

National Canners' Association reports a total corn pack of 11,267,897 standard cases, compared to 10,192,730 standard cases in 1933. The California pear pack, up to Oct. 1, is now reported as 2,662,842 standard cases (No. 2½ basis), compared to 1,927,564 in 1933. Snap-beans pack is estimated by B.A.E. as approximately six million standard cases (24 No. 2) or about 460,000 cases above last year. The total pea pack was 15,742,000 standard cases (24 No. 2), compared to 12,893,000. Tomato yield, as of Oct. 1, was estimated as equivalent to 14,500,000 cases of 24 No. 3 cans, against 11,986,000 in 1933.

Crop Summary

With harvesting about completed, the Crop Reporting Board's figures as of Nov. 1 indicate with considerable accuracy just what results were realized in this year of drought. Discouraging reports from the corn belt show the crop husking out at lower yield than previously reported. Estimated corn total is now 1,372,000,000 bu., the lowest since 1881. The yield per acre was only 14.8 bu. compared to the ten-year average of 25.7 bu.

Potatoes are a bright spot, with October rains improving the yield to 383,000,000 bu., 63,000,000 above last year, with yield per acre about normal. In spite of increased acreage, sweet potatoes show an increase of only 2,000,000 bushels to 67,000,000, though the upward trend in this crop continues. Soybeans harvested, not including acreage grazed, cut for hay or used otherwise, have increased 4,200,000 bu. over last year with considerably higher acre yield. The trend in this crop is markedly upward.

Among other crops, buckwheat, at 8,231,000 bu., is higher than last year but below the five-year average; rice, at 37,365,000 bu., is 5 per cent above 1933, and 14 per cent under the five-year average; dry beans, at 9,548,000 bags, are 22 per cent below 1933 and 18 per cent under the five-year figure; and peanuts, at 538,000 tons, are 17 per cent over last year and 19 per cent greater than the average for 1927-1931.

Yield of fruits is still disappointing, though the estimate is higher than on Oct. 1. The total for the country, all fruits, is expected to be about 10 per cent below average. High spots: pears, 23,512,000 bu., 5 per cent above average; Florida oranges, 21,000,000 boxes, 50 per cent above average; Florida grapefruit, 40 per cent above average, at 15,000,000 boxes. Low spots: grapes, 1,740,218 tons, 24 per cent down from the average 1927-1931 production; apples, 120,247,000 bu., more than 16 per cent below last year and 23 per cent off from the five-year average; and cranberries, 442,300 bbl., compared to 704,700 bbl. in 1933, and an average of 563,256 bbl. for the period 1927-1931.

Pickle Prospects

Statistics made available at the recent Chicago meeting of the Pickle Packers' Association indicate a below-normal intake for the current year. This should reduce the carryover next year and improve the statistical position of the industry. The estimated intake from the 1934 crop for the United States is 3,482,800 bu. Carryover of old crop on Sept. 1 was estimated at 1,698,000 bu. Total estimated available supply is 5,180,800 bu., from which the estimated September consumption of 350,000 to 400,000 bu. must be deducted to obtain the Oct. 1 condition.

CONSTRUCTION NEWS

	Pending (thousands)	Awarded November (thousands)	Total Awarded 1934 (thousands)
Bakery	$90	$157	$899
Beverages	1,279	448	8,345
Canning and Preserving	58	28	1,200
Confectionery	.....	.....	133
Grain Mill Products	110	51	4,086
Ice, Manufactured	101	.....	87
Meats and Meat Products	309	114	1,377
Milk Products	393	84	1,713
Sugar	.....	.....	105
Miscellaneous	356	530	1,624
Total	$2,696	$1,412	$19,569

INDICATORS

CAR LOADINGS, though showing a decline as compared to preceding weeks, are somewhat above 1933 and considerably over 1932.

RICE PURCHASES by federal relief, of over 50,000,000 lb., will be distributed in all States, which should help the future extension of rice as part of the national diet.

CRANBERRY HARVEST is the smallest since 1921, but there will be no shortage of the conventional sauce with the Christmas turkey, although the supply of canned sauce for later use may be small.

PEAR PACK in California ranges as much as 40 per cent above that of some of the preceding four years and is the highest since the depression set in.

WORLD COFFEE STOCKS, excluding the Brazilian restricted stock, decreased 1,238,374 bags, or 14.9 per cent, during October.

SALMON PACKING in the Northwest may experience a 50 per cent curtailment as a result of the new law prohibiting the use of traps and seines in Washington waters.

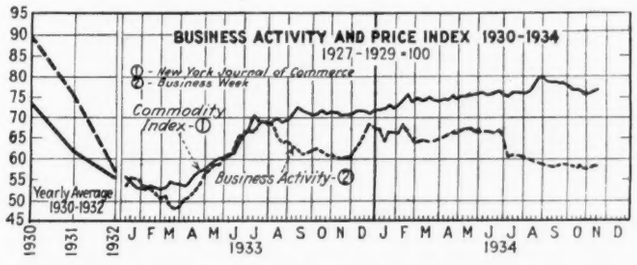
DRY SKIM MILK purchases of 9,000,000 lb. for the unemployed promise some relief for milk canners.

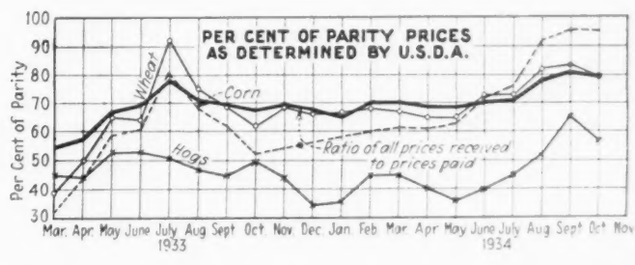
PATENT APPLICATIONS and grants are 10 per cent higher in 1934 than in 1933, and the Patent Office says that this indicates business revival.

CORN GROUND in October was 9 per cent below the same month in 1933, also the grind for the first ten months of the year was the same distance below the 1933 level.

HIGHER PRICES for grape juice are likely to result from the short crop realized in the Chautauqua (N. Y.) juice belt, where only 25 per cent of a normal crop was harvested. Stocks of unfermented juice are unusually small.

KRAUT PACKERS buying cabbage in the open market will pay $10 to $12 per ton this year, compared to $6 per ton for cabbage contracted for earlier in the season. This is one of the factors that is increasing kraut-packing costs 50 per cent this year.


BUSINESS ACTIVITY AND PRICE INDEX 1930-1934
1927-1929=100
① - New York Journal of Commerce
② - Business Week
Commodity Index-①
Business Activity-②
Yearly Average 1930-1932
1930
1931
1932
J F M A M J J A S O N D J F M A M J J A S O N D
1933
1934


PER CENT OF PARITY PRICES AS DETERMINED BY U.S.D.A.
Per Cent of Parity
Wheat
Corn
Hogs
Ratio of all prices received to prices paid
Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov.
1933
1934

NEW METHODS ...PACKAGES ...PRODUCTS

A streamlined container, 100-per cent cent harmonious in design is being used by Glaser, Crandell Co., Chicago, Ill., for its preserves. Covered with a deep metal cap, the jar looks well on the consumer's table and presents an appearance of bulk. An inner cap seals the conveniently wide mouth of the jar.

Useful as well as attractive, the new "Safedge" container for the vacuum-packed tea of Sands, Taylor & Wood Co., Boston, Mass., will be depended upon to boost sales. No dust collects in the bottom of the tumbler, this being removed by a vacuum process before packing.

Cranberry rye bread has been put on the market in dainty slices by Gnome Products, Inc., New York. The product is wrapped in transparent cellulose to keep it fresh. It should find much favor during the holiday season.

"Freezest," a liquid mixture for ice cream, sherbets, water ices and other cold desserts, is being manufactured in eight flavors by A. A. Knights & Son Corp., Malden, Mass. Made from fruits, fruit flavors and an ice-cream base, the product is put up in 7-oz. cans.

Frozen-Fruit Confection

Fruit has been made into a frozen confection by Sno-Kis Fruit Corp., of Portland, Ore. The fruit is worked into a pulp, combined with a binder and frozen into a creamy, smooth-textured consistency by a process similar to that for making ice cream. The purpose of this process is to retain the natural fruit flavor and bouquet and prevent the product from becoming hard or icy.

S. E. Haugner, originator of the frozen-fruit confection, reports that almost any fruit can be converted by the Sno-Kis process into a delicious dessert. Apricots, apples, cherries, raspberries, strawberries, peaches, plums, prunes, cantaloupe, pears, grapes and others have been used.

The new confection is marketed at soda fountains in the form of a chocolate-covered sandwich and also is sold in a brick of eight individually wrapped servings. The distribution methods are about the same as for ice cream.

Develops Citrus Wines

Wine can be produced from citrus fruits at a cost of about 32c. a gallon by a process developed at the Winter Haven (Fla.) station of the Department of Agriculture. Made from culls, the wines are prepared by reaming the fruit on rapidly rotating burs and then straining the juice and fermenting it with a pure culture of wine yeast. Corn sugar is added to increase the sugar content by about 25 per cent.

The estimated cost of 32c. is based on a price of 45c. a field box for the fruit and a plant investment of $15,000.

The number of wines that can be made range from light to heavy, and while these resemble sauterne, sherry, port and other wines, they have their own characteristics and are not intended as imitations.

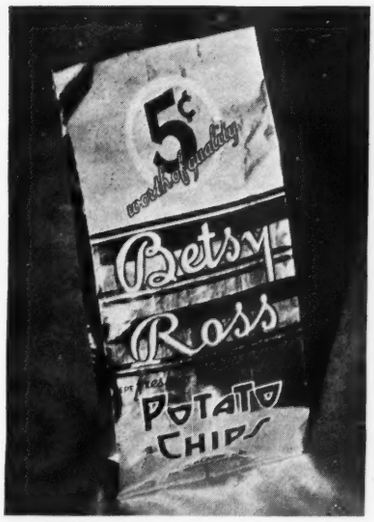
Dry-Processed Shrimp

Superior Fish Co., Seattle, Wash., sales agent for Alaska Shell Food Co., has recently put on the market a new shrimp package. The fish are not boiled but the meats are loosened in the shells by dry heat, which does not leach away the flavor elements. The shrimp are dry-packed in 8-oz. glass jars, exhausted and cooked.

Draft Beer in Bottles

Bottled draft beer has been introduced to the Northwestern market by Century Brewing Association, Seattle, Wash. The beer is bottled in 22-oz. containers, three of which are put up in a carry-home cardboard carton to provide a convenient half-gallon package. The beer is not pasteurized, and it is identical with that put into kegs for sale in glasses. The bottles, however, are sterilized by a special process before they are used.

The "big five" evaporated milk brands all are irradiated with ultra-violet light to increase their bone- and tooth-building vitamin D potency. The same packers have nineteen other irradiated brands.



Packages Potato Chips In Metal Bags

Ross Potato Chip Co., Richland, Pa., has adopted an aluminum-foil sack for both its 5c. and 25c. containers. Having a reflective metal surface, this bag protects the chips against moisture, light and heat. Moisture, of course, destroys the crispness of the chips; light introduces photochemical action that develops rancidity; and heat causes staling. The bags are greaseproof, too, so they will not become soiled.

In appearance, the metallic luster and clear-cut printing give a pleasing effect. And, of importance to the consumer, the container may be reclosed tightly merely by folding the top.

Three tests were made by Reynolds Metals Co., manufacturer of the bag, to determine its effectiveness. Exposed to ultra-violet irradiation for two hours and to a temperature of 100 deg. F. and a relative humidity of 85 to 90 per cent for four days, chips in the metal bag are said to have remained fresh and crisp. Those in a glassine bag exposed to the same conditions absorbed 10 per cent of moisture, became soggy and rancid and also developed an offensive odor. In the second test, chips in metal and waxed-paper bags were exposed to 100 deg. F. and 85 to 90 per cent humidity for 13 days. The chips in the waxed-paper bag absorbed 4 per cent of moisture, while those in the metal bag absorbed only 0.93 per cent. A third test with a double glassine bag and a metal bag showed a moisture gain of 1.5 per cent for the glassine and 0.11 per cent for the metal under the same conditions as the second test.

Packages Fish Tenderloin

Haddock Tasty Loins, comprising tenderloin cut from each side of the fish, are being packed by Booth Fisheries Corp. at its Boston plant. For the larger cities, the loins are packed fresh in 15-lb. tins, but for inland trade they are quick-frozen and put up in 5-lb. cartons. Both types are skinned and boned and wrapped in transparent cellulose. The company also is packaging spiced herring in glass containers. This formerly was sold only in pails and barrels.

Stuffed and Jerked Fish

Two new fish products have been put on the market by Coast Fisheries, Reedsport, Ore. One is a crab delicacy; the other, jerked salmon. The new crabmeat consists of the cleaned back of a crab shell stuffed with picked leg and body meat, each shell containing ½ lb. to ⅔ lb. of fish. Transparent cellulose wrappers give it a neat appearance. The jerked salmon is packed in transparent cellulose bags and retails at 10 cents. This company also manufactures "Salmon Weenies," a combination of ground salmon and cracker crumbs stuffed in casings.

Pectinized Malted Milk

An old favorite, malted milk, may be given a new twist by the addition of pectin, it has been discovered by California Fruit Growers Exchange, Los Angeles. Pectin provides the creaminess usually obtained by the use of ice cream. In the soda-fountain malted, it may replace all or part of the ice cream. In packaged malted milks intended for the home, in which ice cream commonly is not used, it has even greater possibilities. The pectin is put into the malted milk either by mixing the two materials as powders or by adding a pectin solution before reducing the milk to a powder.

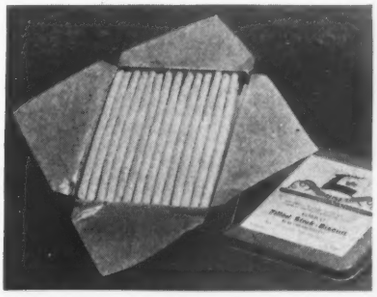
Bread and Pudding Loaf

"Wheatamin," a whole-wheat loaf that comprises a cross between a bread and a pudding, has been perfected by Zinsmaster Breads, Inc., Des Moines, Iowa. Large enough to make fifteen to twenty slices, the loaf is wrapped in transparent cellulose which gives visibility to its dark brown color. Sold both as a bread and a dessert, the new loaf was introduced by daily radio broadcasts.

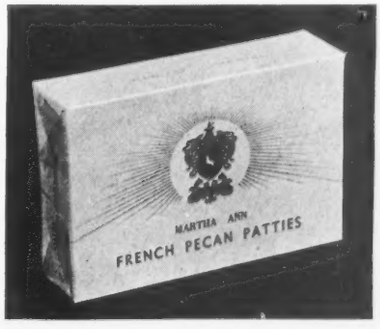
Italian Vegetable Soup

"A different kind of vegetable soup," reputed to have a greater vegetable content than any other on the market, is an innovation of the Emm-an-Cee Co., Chicago packer of Italian foods. The heavy consistency permits the consumer to dilute the soup with water if it so pleases her. The product is seasoned according to the Italian formula, giving it an exotic tang. It is labeled M & C Italian Minestrone Soup.

B-Ton vitamin food, packed by United Laboratories, Pasadena, Calif., has been given a modern dress. An impressive black panel and rich tones of orange and brown make an effective design. B-Ton consists of wheat embryo and dry yeast, is rich in vitamins B, E and G, and is a good source of vitamin A.



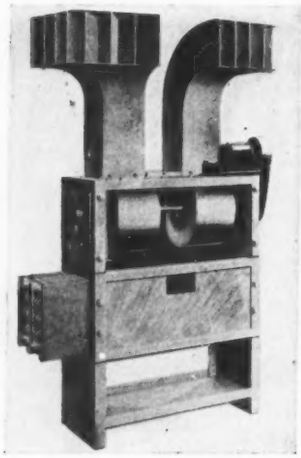
Stick-biscuits with a rum-cream filling have been introduced by Robico Biscuit Co., Inc., New York. Made to be served with ice cream, wine, tea, chocolate and what not, the biscuits are made in a variety of flavors other than rum.



French pecan patties put up in an aristocratic looking white and gold package, wrapped in transparent cellulose, are a new Martha Ann delicacy introduced by Grace A. Rush, Inc., Cincinnati.

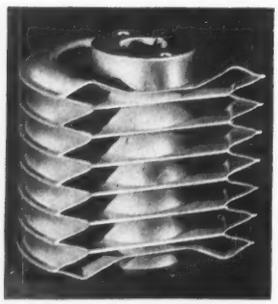
Merchandising master-minds have put the lowly spud—of all things!—in a fancy package. This new package, used by Idaho Packing Corp., Pocatello, suggests larger unit sales, provides a convenient method of handling and distribution and gives the product a higher standard. It is a Hinde & Dauch creation.

NEW • EQUIPMENT • FOR F



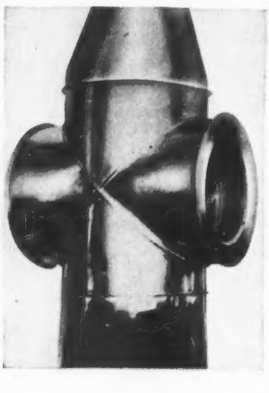
Cold Diffusers

For new installations or for replacing bunker coils in beverage, canning, preserving, confectionery, dairy, ice cream and meat packing plants, a new line of cold diffusers has been developed by Carrier Engineering Corp., Newark, N. J. These are known as Series 15-L and are from 1 to 30 tons capacity. Hot-dipped galvanized metal is used for sheet-metal parts. Low-velocity outlets are arranged to distribute air in all directions. Units are of floor-mounting type and can be arranged for top or side discharge. Methyl chloride, Freon or ammonia can be used as the refrigerant.



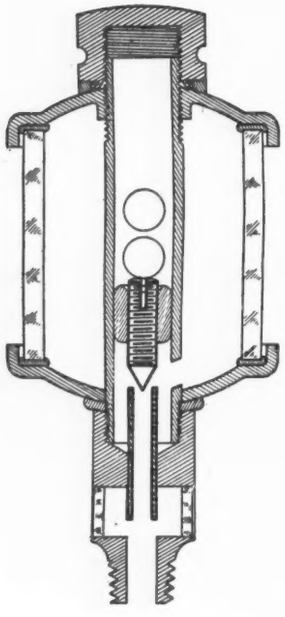
Texrope Sheave

Under the name of Duro-Brace Texsteel Sheave, Allis-Chalmers Mfg. Co., Milwaukee, Wis., is introducing a new reinforced steel sheave for Texrope drives. To obviate bending of the outside walls under the strain of overloads, this sheave has outside walls reinforced by a convex steel plate, which strengthens these areas so as to avoid practically any possibility of distortion. Welding at the rim and web, for additional strength, and interior grid-type construction for rigidity are features of this new sheave.



Welded Tantalum

Laboratory accessories made of tantalum are now being fabricated by arc welding in the plant of Fansteel Products Co., Inc., North Chicago, Ill., by means of a recently perfected method. By this means, apparatus not formerly available in tantalum can now be obtained for use in operations where the properties of the metal, particularly its great strength, which is 2½ times that of platinum, make it desirable. The new process can be applied to sheets as thin as 0.005 in. by means of welding equipment developed by Lincoln Electric Co., Cleveland, Ohio.

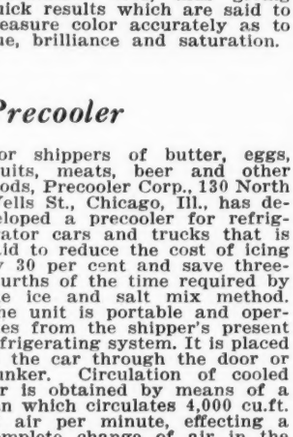


Lubricators

Improved lubricators of cadmium-plated steel, called the 1,000 series, replace the former brass lubricators made by Victor Lubricator Co., 360 North Michigan Ave., Chicago, Ill. The top is now a stamping, drawn and threaded, replacing a hex-nut. The sight feed construction has been redesigned, to provide greater visibility. The cap is provided with a patented washer-retainer. Valve control is inside the filler tube, to protect the adjustment from tampering. This lubricator embodies the oil-saving principle of lubrication used by the preceding design.

Color Analyzer

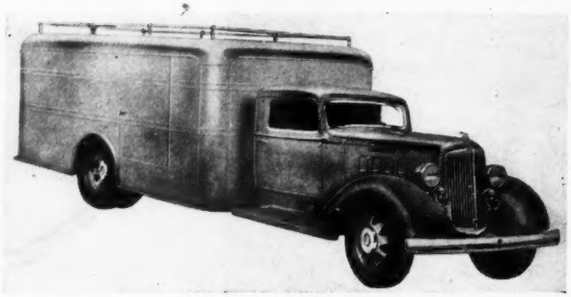
Samples of food products, such as coffee, butter, tomato products, mayonnaise, canned fruits and vegetables, may be analyzed for color or compared to a standard by means of the H-S-B Color Analyzer, developed by Bausch & Lomb Optical Co., Rochester, N. Y. Through a prism system and proper lenses a vertically divided, circular photometric field is produced. Light for one half of the field is reflected from a standard Munsell color disk, for the other from the surface of the sample. Illumination is provided by housed lamps directly over the reflecting surfaces. The prism is mounted in the hollow shaft of the motor, which in turn is mounted directly in the optical path so that the light beam



passes along its axis of rotation. With this instrument, the Munsell disks can be adjusted quickly while watching the photometric field, thus giving quick results which are said to measure color accurately as to hue, brilliance and saturation.

Precooler

For shippers of butter, eggs, fruits, meats, beer and other foods, Precooler Corp., 130 North Wells St., Chicago, Ill., has developed a precooler for refrigerator cars and trucks that is said to reduce the cost of icing by 30 per cent and save three-fourths of the time required by the ice and salt mix method. The unit is portable and operates from the shipper's present refrigerating system. It is placed in the car through the door or bunker. Circulation of cooled air is obtained by means of a fan which circulates 4,000 cu.ft. of air per minute, effecting a complete change of air in the car every half minute.



Speedwagon Models

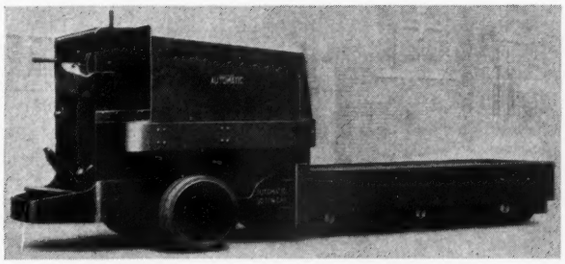
New 1935 models of ½-ton and 1½-ton trucks by Reo Motor Car Co. are now available. The ½-ton vehicle has a Flying Cloud 6-cylinder engine of 80 hp. at 3,200 r.p.m., while the 1½-ton truck has a heavy-duty 6-cylinder Gold Crown engine rated at 68 hp. at 2,800 r.p.m. Both models use helical-gear, silent-type transmissions and are provided with self-replenishing, self-equalizing hydraulic brakes. Lines of hood, cab and fender are of free-flowing design, to harmonize with modern bodies such as the special refrigerator body shown here.

Vacuum Cleaner

High cleaning speed, thorough cleaning and low operating costs are claimed for a portable heavy-duty vacuum cleaner now being marketed by Invincible Vacuum Cleaner Mfg. Co., Dover, Ohio. This machine is a 4-stage turbine type, powered with a 1½-hp. motor. It is 45 in. long, 19 in. wide and 37 in. high. The weight is 250 lb. Capacity is 155 cu.ft. of free air per minute.

Refrigerated Semi-Trailer

An all-wheel drive, highway transportation truck of semi-trailer design, with refrigerated body, has been developed by Marmon-Herrington Co., Inc., Indianapolis, Ind. The tractor has a double-decked cab, with sleeping compartment in the upper section. Tractor has a wheelbase of 145 in., drives through all four wheels and has a 106-hp. engine. Tires are 9.20 x20, single front and dual rear. There are ten forward speeds and four reverse. Maximum payload is 24,000 lb. Ice capacity of the trailer is 500 lb. Trailer tires are dual, 7.50x20. Over-all length—tractor and semi-trailer—is 33 ft., 10 in., width is 8 ft.; height, 11 ft. 4 in.



Large Industrial Truck

Largest of all industrial trucks, according to the maker, Automatic Transportation Co., Chicago, Ill., is a recently developed 30-ton, electric low-lift truck used for handling heavy dies and similar equipment. The load platform is 4 0x96 in. and 17 in. high. Vertical lift provides for lifting the loaded skid platforms 4½ in. from the floor for transporting. The steering is by means of motor, making maneuvering easy.

Hose for Paint

Resistance to commercial solvents and greatly prolonged life are advantages claimed for a paint fluid hose developed by Electric Hose & Rubber Co., Wilmington, Del. Made of newly developed compound, the hose is said to have ample strength and flexibility, but to be free from the tendency to soften, slough off, break apart or disintegrate from the action of oils or solvents. It is furnished in inside diameters of ¼, 5/16, ⅜, 7/16 and ½ inch, and in lengths up to 500 ft.

The Manufacturers • • Offer • •

Electric Cable — For industries, all standard types of insulated wire and cable, for electric transmission, distribution and control, described and listed by General Electric Co., Schenectady, N. Y., in illustrated bulletin GEA-1838.

Super-Settler—Water purification and industrial waste-water treatment, by newly developed equipment for sedimentation and separation, discussed in bulletin by International Filter Co., 59 East Van Buren St., Chicago, Ill.

Blowers — Standard and heavy-duty blowers of the positive rotary type are the subject of illustrated bulletin 22:23-B10, published by Roots-Connersville Blower Corp., Connersville, Ind.

Portable Welders — Specifications for d.c. motor-driven welders, types SA 300, SA 400, SA 600, are given in bulletin No. 302 by Lincoln Electric Co., Cleveland, Ohio. Type SA 400, engine-driven, is the subject of bulletin No. 305.

Gas Burners—For industrial application, a new line of "Refrak," refractory-screen gas burners, by Selas Co., Philadelphia, Pa., is described in a new bulletin.

Flow Control—For supplying measured quantities of water for bakery mixers, the Gottfried Automatic Flow Control is described in a leaflet recently released by Baker Perkins Co., Saginaw, Mich.

Stainless Fittings — Sanitary pipe fittings and valves of 18-8 chrome-nickel alloy are listed and described in a bulletin by Crane Co., 836 South Michigan Ave., Chicago, Ill.

Electric Welders — Of belted and direct-driven types, made by Lincoln Electric Co., Cleveland, Ohio. Leaflet gives general specifications of Types SA300, SA400 and SA600, with rating and dimension tables.

Circuit Breakers—Air circuit breakers, Type HD, 5 to 10,000 amp., 750 volts a.c., or 600 volts d.c., of live-front or dead-front construction, steel inclosed, form the subject of a revision of Catalog No. 5, published by Roller-Smith Co., 233 Broadway, New York, N. Y.

Hydrometers — Part 2, Blue Book, just issued by H-B Instrument Co., Philadelphia, Pa., lists and describes a full line of hydrometers for industrial and laboratory use.

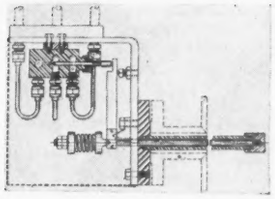
Bearing Oiling — Advantages of self-sealed, self-lubricating ball bearings in avoiding spoilage of foods and other products with oil and in lowering maintenance costs are the subject of a booklet by the New Departure Mfg. Co., Bristol, Conn.

Laboratory Men — Will find information concerning Fixanal preparations for making volumetric solutions in a bulletin published by J. D. Riesel-E. de Haën A. G., Hanover, Germany, and distributed by Pfaltz & Bauer, Inc., 300 Pearl St., New York, N. Y.

Filtration and Filters — Rotary vacuum dewaterers and vacuum filters used in food manufacture and particularly in sugar refining are described and their use discussed by Filtration Equipment Corp., 350 Madison Ave., New York, N. Y., in a new illustrated booklet.

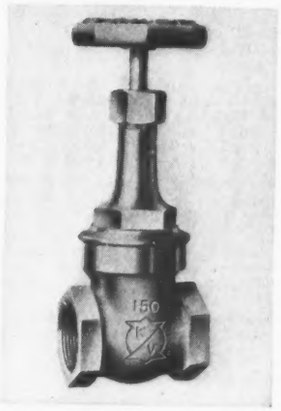
Enameled Iron — Two pamphlets issued by American Rolling Mill Co., Middletown, Ohio, deal with Armco iron as an enameling base and the sales value of porcelain enameled equipment.

Slicers and Wrappers — Improvements made in its line for 1935 are described by Gellman Mfg. Co., Rock Island, Ill., in a new catalog of "Speed Giant" bread slicing and wrapping machines.



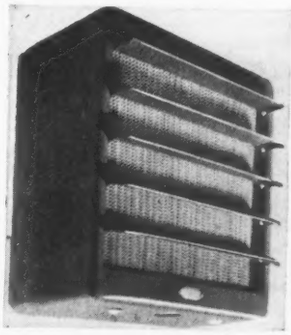
Temperature Controller

For systems where it is desired to control the temperature of steam after it has passed through a reducing and desuperheating station, or where one large or a number of valves may be in operation and it is essential accurately to maintain temperatures, Swartwout Co., Cleveland, Ohio, offers the Thermo Master regulator. This utilizes a bimetallic thermostat, inserted in the steam line on the outlet side of the desuperheater or in some other appropriate place. Through levers, the thermostat actuates a three-way valve which admits pressure to or relieves it from the diaphragm-operated control valves.



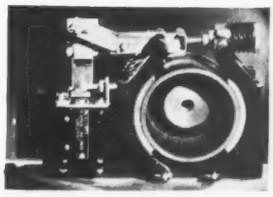
Heavy Bronze Valves

Heavy rising stem standard bronze gate valves are a new line announced by Kennedy Valve Mfg. Co., Elmira, N. Y. These valves are for 150 lb. working steam pressure and 250 lb. working water, oil or gas pressure. Wedge disks are solid, and there are no small, quick-wearing parts. The connection between the disk and stem is flexible, to avoid binding or springing when the valve is closed.



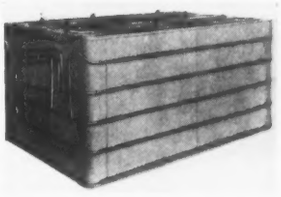
Unit Heater

Quietness, handsome appearance and improved design are claimed for the new Series 3 unit heaters introduced by Fedders Mfg. Co., Inc., Buffalo, N. Y. These heaters come in a number of sizes, 15⅝x14½x17⅞ in. to 25x16⅝x28½ in. in dimensions. Cabinets, dark brown in finish, are electrically welded and reinforced to give rigidity and strength. Efficiencies of heat-transfer surface, air velocities and final outlet temperatures are said to be balanced.



Electric Brakes

Small a.c. and d.c., solenoid-operated brakes in three sizes are being made by Cutler-Hammer, Inc., Milwaukee, Wis. Torque ratings, ranging from 3 lb. ft. to 75 lb. ft., are in accordance with NEMA standards, and conform closely to the full-load torque ratings of standard small motors. Brake wheels are large, to allow low total brake-shoe pressures, and consequent long, even wear on friction surfaces, also low stresses in pins and pivot points, assuring long wear of these parts, and allowing the use of a small operating solenoid. These and other new design features are said to make these brakes particularly adaptable for use with small machines and conveying equipment where frequent, quick and sure stops are required.



Refrigerated Truck

A refrigerated truck body of new design was introduced by General Electric Co. at the recent Dairy Industries Exhibition in Cleveland. This body operates electrically for overnight cooling or precooling. It is of all-steel, welded construction, insulated by G. E. Thermocraft sealed in for protection against moisture. There is a heat exchanger which prevents frosting of the suction line and affords maximum evaporator efficiency. Body interiors are coil-free. Electric operation provides full refrigerating capacity while on the road and requires but 1 gal. of gasoline per day on a normal 75- to 100-mile route. There are three body sizes: 315 gal., with an empty can compartment; 420 gal. with empty can compartment; and 540 gal. without can compartment. The illustration shows the refrigerated compartment, with cooling coils soldered to outer surface, removed from outer shell.

PATENT DIGEST

COMPLETE TEXT *of any United States patent may be obtained by remitting 10c. (not stamps) to the Commissioner of Patents, Washington, D. C. Patents should be ordered by number, as titles used in this digest seldom correspond with title of patent.*

Hydrocarbon Resins of Petroleum Origin Used in Chewing-Gum Manufacture—Carleton Ellis, Montclair, N. J., to Standard Oil Development Co. No. 1,976,774. Oct. 16, 1934.

Prunes Subjected to Boiling Hot Water and Packed in Airtight Container While Still Hot but Free From Moisture—Clifford B. Pape to California Fruit and Apricot Growers' Association, San José, Calif. No. 1,976,961. Oct. 16, 1934.

Mechanical Means for Trimming and Sealing Pies—Alexander F. Jackson, West Orange, N. J., to Pie Bakeries, Inc., Newark, N. J. No. 1,977,309. Oct. 16, 1934.

Method of Decaffeinating Green Coffee Beans—Harold K. Wilder to Kellogg Co., Battle Creek, Mich. No. 1,977,416. Oct. 16, 1934.

Making of Butter From Plastic and Sour Creams—Herman D. Wendt, West Chester, Pa., to Milk Processes, Inc., Philadelphia, Pa. Nos. 1,977,927, 1,977,928 and 1,977,929. Oct. 23, 1934.

Non-hydroscopic Mixture of Fruit-Juice Solids and Pectin—Eloise Jameson, Corona, and Clarence P. Wilson, Ontario, to California Fruit Growers' Exchange, Los Angeles, Calif. No. 1,977,945. Oct. 23, 1934.

Tomatoes Given Heat-Treatment at 150 to 212 Deg. F. in Pool of Tomato Juice and Pulp During Conversion Into Juice and Finely Divided Pulp With Removal of Skin and Larger Pulp Particles — Edward C. Eberts, Jeffersonville, Ind. No. 1,978,078. Oct. 23, 1934.

Process of Making Liquid Extract Concentrate of Vegetables Other Than the Garlic and Onion Group by Distillation With Water and Fixed Oil at a Temperature Between 120 and 220 Deg. F. — John D. Rolle, Chicago, Ill. No. 1,978,171. Oct. 23, 1934.

Transparent Sausage Casing With Gelatinous Inner Wall—Julius Voss and Oswald Würges, Weisbaden-Biebrick, Germany, to Visking Corp., Chicago, Ill. No. 1,978,774. Oct. 30, 1934.

Raw Sugar Syrup of 68 to 80 Deg. Brix Clarified by Heating With as Much as 3 Per Cent Active Carbon to 20 Deg. C. Under Pressure—August L. van Scherpenberg, Tirlemont, Belgium. No. 1,979,781. Nov. 6, 1934.

Syruped Fruit Peel Preserved by Canning—Alexander W. Stott, Clearwater, Fla., to Hills Bros. Co., Inc., New York, N. Y. No. 1,980,013. Nov. 6, 1934.

Compressed Mass of Lacto-bacillus Acidophilus and Yeast — William Ludwell Owen to Lacto-Yeast Co., Inc., Baton Rouge, La. No. 1,980,083. Nov. 6, 1934.

Frozen Confections on a Forked Stick—Adolph Hopp, New York, N. Y. No. 1,980,588. Nov. 13, 1934.

Process for Milling Wheat Flour—Cyrus S. Johnson, Fulton County, Pa. No. 1,980,622. Nov. 13, 1934.

Package for Curdled-Milk Dessert Which Will Absorb Slight Quantity of Whey Formed During Handling—Karl J. Monrad, Little Falls, N. Y. No 1,980,628. Nov. 13, 1934.

Method of Removing Pulp From Fresh Fruit Juices to Be Packaged for Beverage Purposes—Isaac H. Polk, Monrovia, Calif., to Sunset Package Corp., Los Angeles, Calif. No. 1,980,695. Nov. 13, 1934.

Three-Pocket Ice Cream Cones—James Balton, Baltimore, Md., one-fourth to Isaac Shapiro, Chicago, Ill.; one-fourth each to Nathan Shapiro and to Samuel Shapiro, Chelsea, Mass., and one-fourth to Joseph Shapiro, Baltimore, Md. No. 1,980,740. Nov. 13, 1934.

Synthetizing Vitamin D Pro-Vitamin Material With Ultra-violet Light Through an Air Space of 2¼ to 5¼ In. — Harold G. Campsie, Hollywood, Calif. No. 1,980,971. Nov. 13, 1934.

Heating Vapor-Sealed Oven With Electricity

(Concluded from page 557)

There are, moreover, a few items of considerable importance which show additional savings for the vapor-sealed type of ovens. Assuming that we operate three ovens of the type and size shown in Fig. 1, the total production would be about 100,000 lb. per day, or 30,000,000 lb. per year. A 4 per cent saving in shrinkage of 30,000,000 lb. is 1,200,000 lb. per year, which, figured as being 60 per cent flour, the yearly saving in flour is 720,000 lb., or $\frac{720{,}000}{196} =$ 3,670 bbl.

Even at only $6.00 per barrel, this yearly saving in flour is $22,020. Compare this figure with the highest yearly baking cost that we have cited —namely, $13,990 for electric baking, which includes all direct and indirect costs—and then consider the question, "Can I afford to bake in an electrically heated perfect vapor-sealed bake oven?"

The flour saving, however, does not constitute the entire saving obtainable with this type of oven, as there is a saving of 33⅓ per cent in current used and the vapors generated by the baking process may be collected and condensed. It appears that the composition of the vapor produced in baking bread is not definitely known. But, assuming a 6 per cent shrinkage, we should have approximately 5 per cent of water vapor and 1 per cent of alcohol, provided at least 2½ per cent of cane sugar and a sufficient quantity of yeast are used in the dough batch and that the usual 3½-4 hour fermentation period is adopted. This 1 per cent yield of alcohol amounts to 1 per cent of 30,000,000, or 300,000 lb., per year for the three ovens. The alcohol together with the other 5 per cent of water vapor means 1,800,000 lb., or approximately 225,000 gal., of 16 per cent alcohol per year.

If 16 per cent alcohol is distilled once, the product is 65 per cent, or 130 proof, liquor, amounting to about 64,000 gal. per year. At present we can only speculate as to the best method of disposing of this byproduct. We will not know definitely the composition of this byproduct until it can be collected in barrel lots and an analysis run on it. At present, to the best of my knowledge, 95 per cent of the 300,000 lb. of possible byproduct is ethyl alcohol; composition of the remaining 5 per cent must be determined by the chemist. In any case it is a possible recovery product that ought to be considered in cutting down the cost of baking.

From all that has been said concerning the advantages of an electrically heated vapor-sealed bake oven it must not be assumed that this would be the only oven suitable to collect the byproducts. The recirculating flue-gas-heated bake oven, previously described, is just as suitable. A specially designed steam-pipe-heated oven employing the flue-gas recirculating method of heating in connection with the steam-pipe method of heating can be designed to be as good as any electrically heated oven, and, of course, this system, when properly designed, is cheaper to operate when figured solely on the cost of the source of the baking heat.

In a vapor-sealed bake oven the fuel cost can be brought down to 2.15 gal. of fuel oil per 1,000 lb. of bread baked. And in this modified system of steam-pipe heating the top and bottom heat can be controlled at will, which, of course, is a great advantage over the present method of steam-pipe-heated systems where the hot flame is in contact with the tubes.

With any oven the baker can make a good investment by installing some meters in the various fuel-oil lines to the ovens, so as to register the quantity of oil burned in each oven. I can assure him that, if he does so, he will most likely get a surprise, for I have run across some ovens lately which use about twice the quantity of fuel they should use. A thermocouple in the stack or breeching registering the stack temperature, together with a flow meter in the fuel-oil line, makes it possible to keep a close record on the furnace efficiency. With both these instruments it is really not necessary to bother with a CO_2 recorder, as high oil consumption together with a low stack temperature would point directly to too much excess air.

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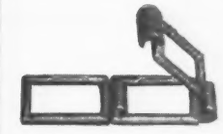
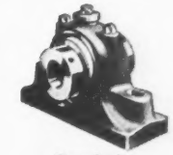


Chains of All Kinds



Bearings

Take-Ups

THIS sample of Link-Belt No. C-102-B Promal Chain was taken from bucket elevator handling highly abrasive material at the Independent Manufacturing Company, Philadelphia.

Since its installation in 1930, this Chain has carried approximately 45,000 tons of material. Not once during this time has this chain parted or given the slightest trouble, and it is probably good for several more years' service before it will even be necessary to replace the original pins.

This is typical of the performance reports of Promal Chains and Buckets, constantly being received from many sources.

LINK-BELT COMPANY 5137A

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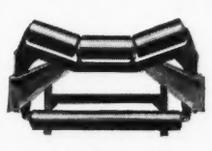

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BALL BEARINGS

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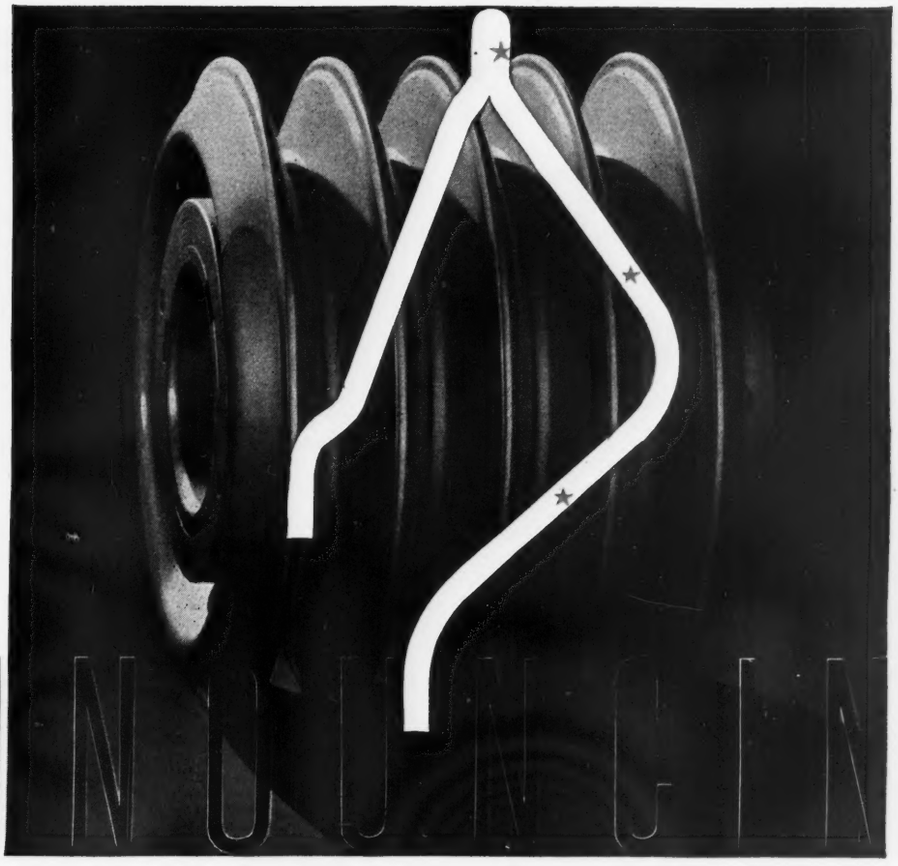


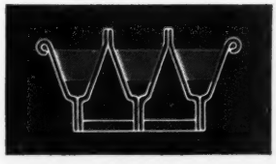
ANNOUNCING!

The new DURO-BRACE TEXSTEEL SHEAVES

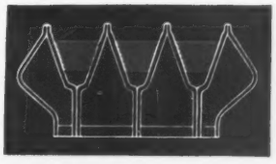
The Allis-Chalmers Manufacturing Company, originators of multiple V belt drives, now offers a new development in sheaves which will withstand the severest duty. • Bending of the outside plate is practically impossible with the new Duro-Brace Sheaves, for in the new design this vulnerable area is braced by a reinforcing convex steel plate, which increases its strength to so great a degree as to eliminate distortion, even under extreme overloads; thus giving a true running drive always. • Duro-Brace Texsteel Drives are 98.9% efficient . . . Require no belt dressing or lubrication . . . Are unaffected by moisture or dust . . . Are Vibrationless, Slipless, Silent, Light and Clean. • Mail us a card asking for Bulletin No. 2188 which sets forth the advantages which Duro-Brace Texsteel Drives offer you in all matters of power transmission, whether they are simple or complex.

★ ★ ★

Former Design: cross-section showing unsupported outside plate.



New Duro-Brace Design: cross-section showing outside plate braced by a convex reinforcing steel plate.



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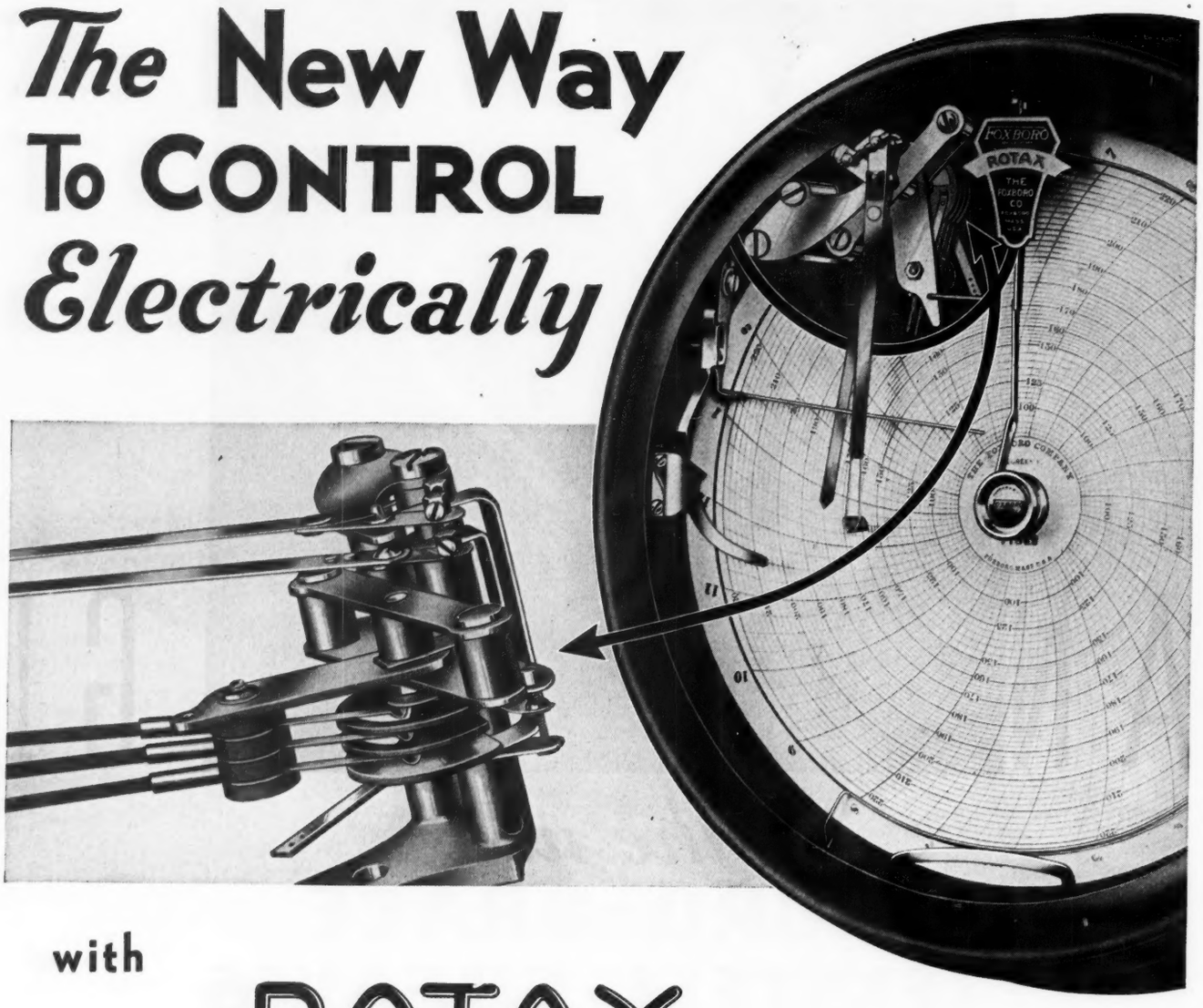

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Each year of that period contributed something to make Engine-under-the-Seat Autocars more efficient and more profitable to their owners. Each year brought progressive developments. That is how the famous upright rear axle, an exclusive Autocar feature, was developed, permitting a shorter wheelbase, regardless of engine location. That is how Autocar engineers solved the problem of designing cabs of sufficient strength, ventilation, wide-angle vision, engine accessibility, and comfort to look well and wear well on a chassis having one-third of the weight on the front axle.

That is why—*today*—Engine-under-the-Seat Autocars, by no means an improvised attempt to meet new conditions, offer the food industry an opportunity for greater profits in more ways than ever before. It took 25 years to design, build, and articulate every element in America's most modern truck.

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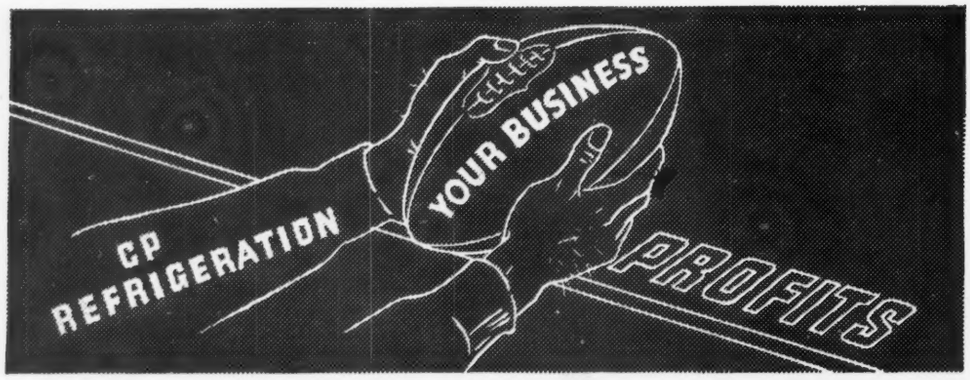

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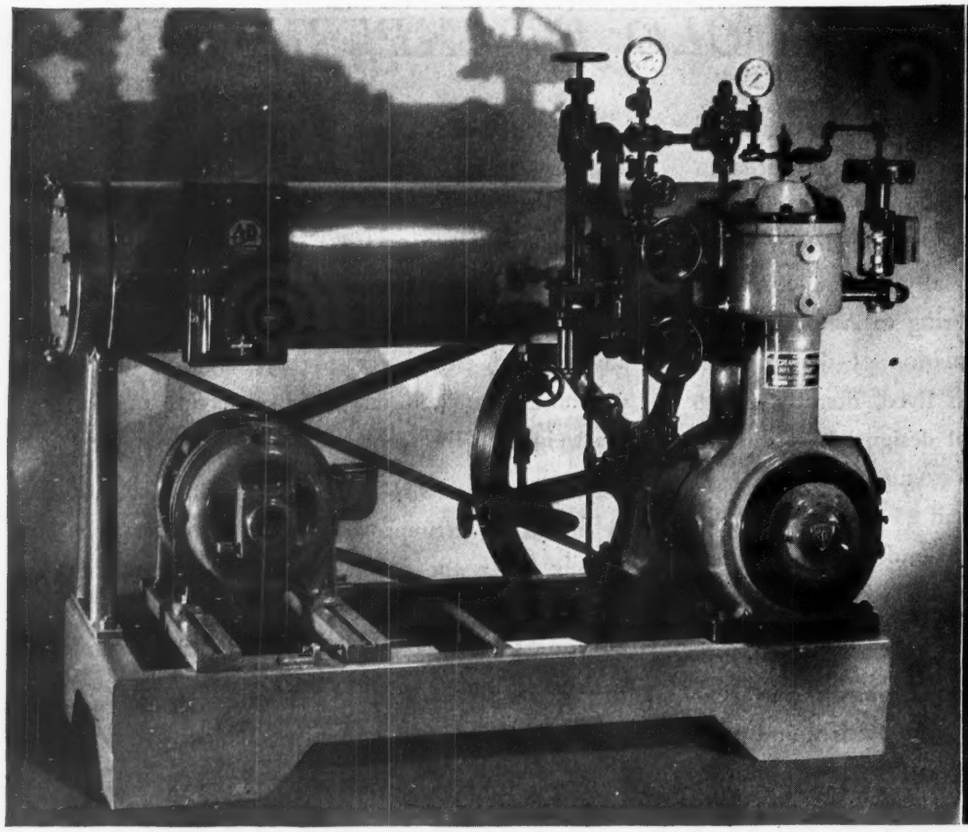

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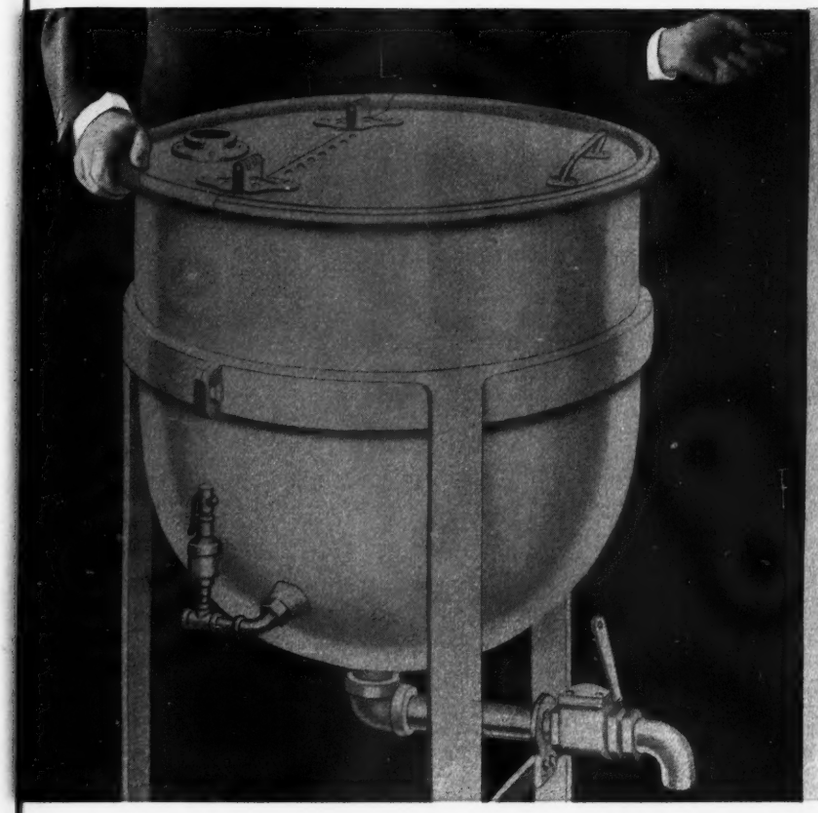

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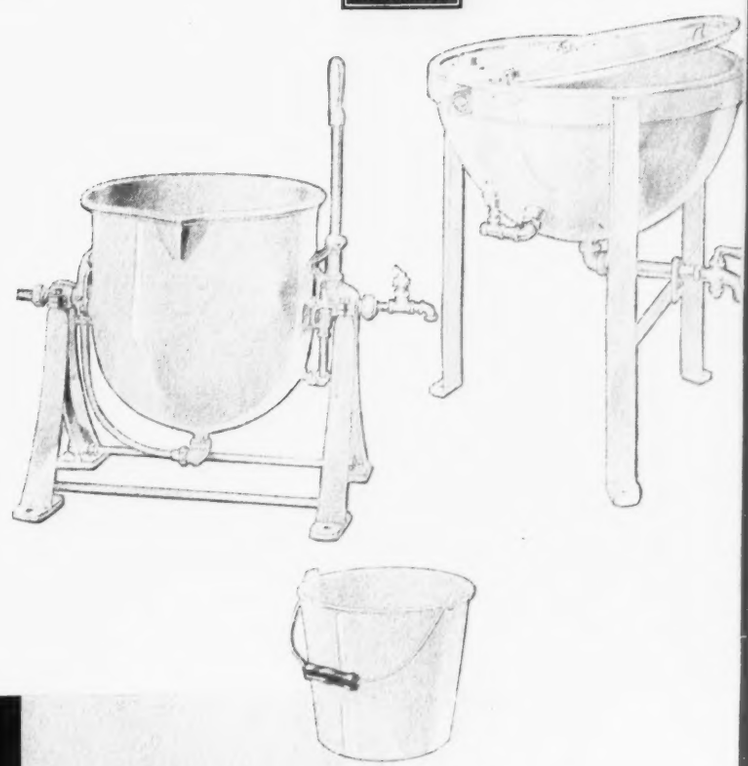

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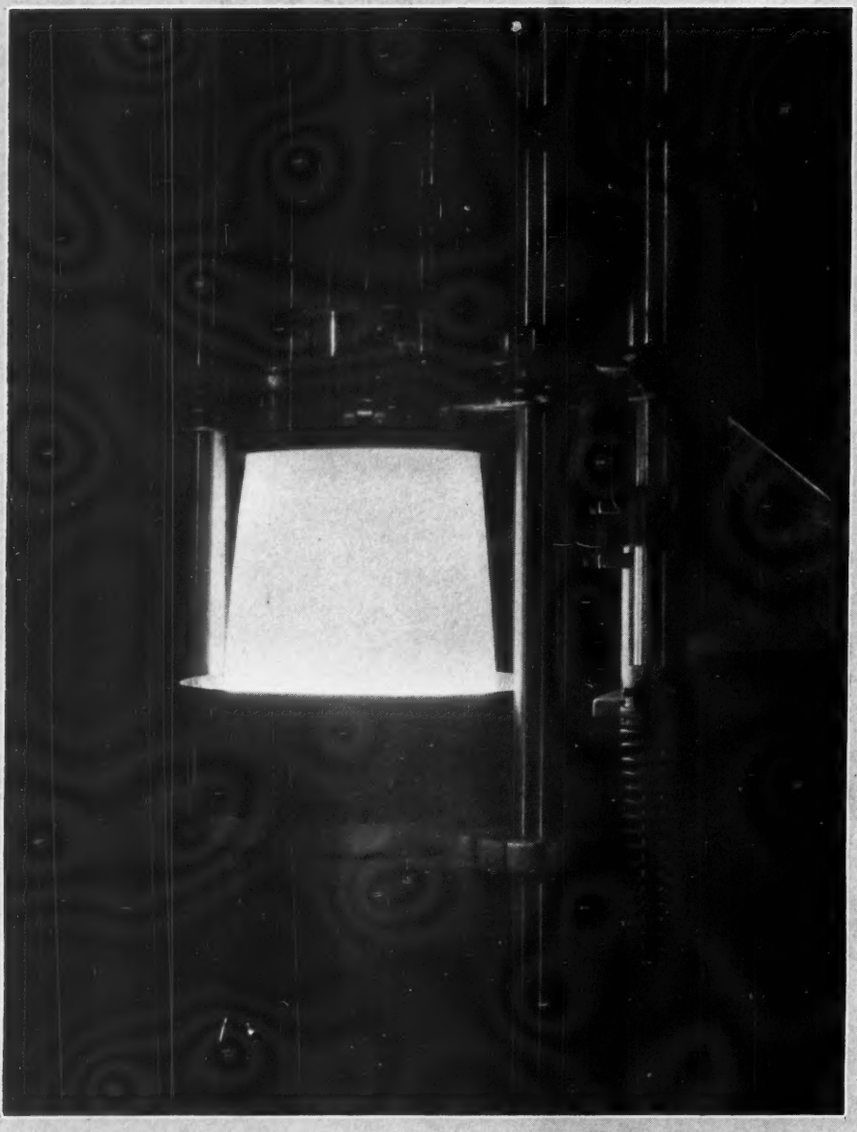

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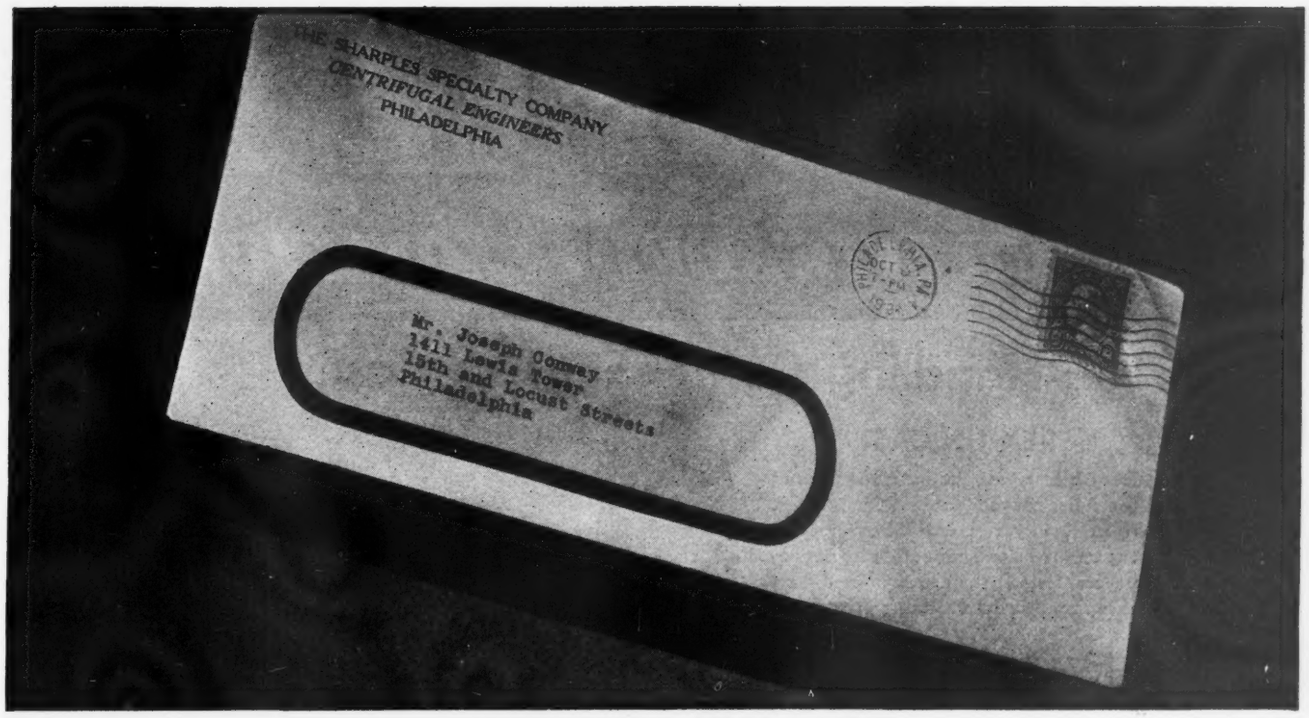

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But it's all the same piece of paper

THE "window" section of the *single piece of paper* used in this envelope has been specially treated to make it transparent—another process in which centrifugal force shows its extreme adaptability. For centrifugal force plays an important part in causing transparency—in this way:

Paper is opaque simply because the air cells between the fibers refract the light. Fill these air cells with a CLEAR liquid and you have transparency. (Our forefathers knew this when they oiled paper for windowpanes.) But liquid *brilliantly* clear is required. No specks of foreign matter to mar visibility can be present. So Sharples Super Centrifuges are used for the job of clarifying the liquid used to bring about transparency—with the desired results.

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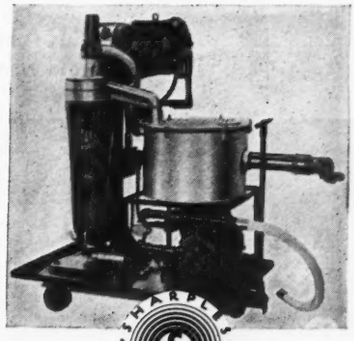

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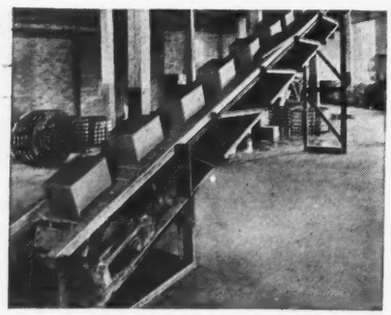
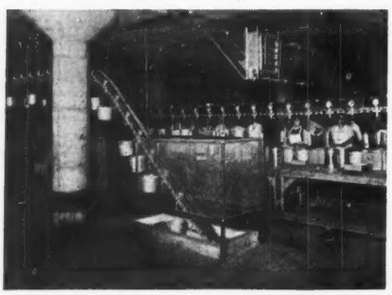
REX UNICAST

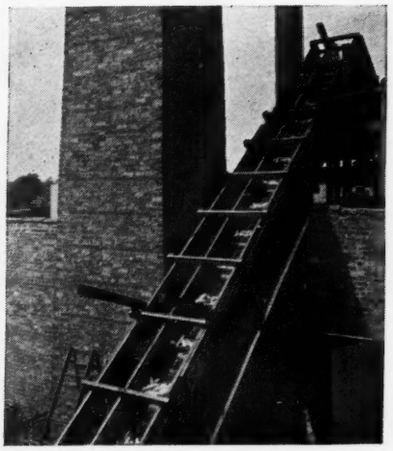
Rex Unicast, with the one-piece link and the roller cast in place, is the greatest roller chain yet devised for overcoming the eccentric load of double strand conveyors. Below, this chain is used on a case conveyor in a canning plant.



REX DROP FORGED

Rex Drop Forged is made of steel drop forgings throughout for greater strength and light weight. This chain is widely used on overhead trolley conveyors because of its ability to run in irregular paths. Below, it is carrying pails of eggs in a produce plant.





REX GRIPLOCK

The most highly developed malleable conveyor chain. Also cast in Z-Metal which adds still greater strength and longer wear. The Griplock joint, with the hidden shoulders, keeps the pins from bending, maintains the accuracy of each link and increases the life of the chain. Above, it is used on a slat conveyor in a canning factory.

OTHER REX CHAINS

Chain Belt Company makes a complete line of conveyors for the food industries and conveyor and drive chains for every type of food plant service—and sprockets for all chains—take-ups—set collars—buckets. Write on the equipment that interests you.

CHAIN BELT COMPANY
1616 W. Bruce St. MILWAUKEE, WIS.

CHAIN BELT COMPANY

CHAIN & BELT CONVEYING

minimum
MILEAGE COSTS AND DELAYS

"It will probably interest you," writes E. H. Groepel, Sioux City Bakery, Sioux City, Iowa, "to know that our experience with Kelly tires on our fleet of eight trucks has been very satisfactory. Our records show that tire mileage costs and delays have been reduced to a minimum. Of most importance is the fact that we maintain delivery schedules due to trouble-free tire-service."

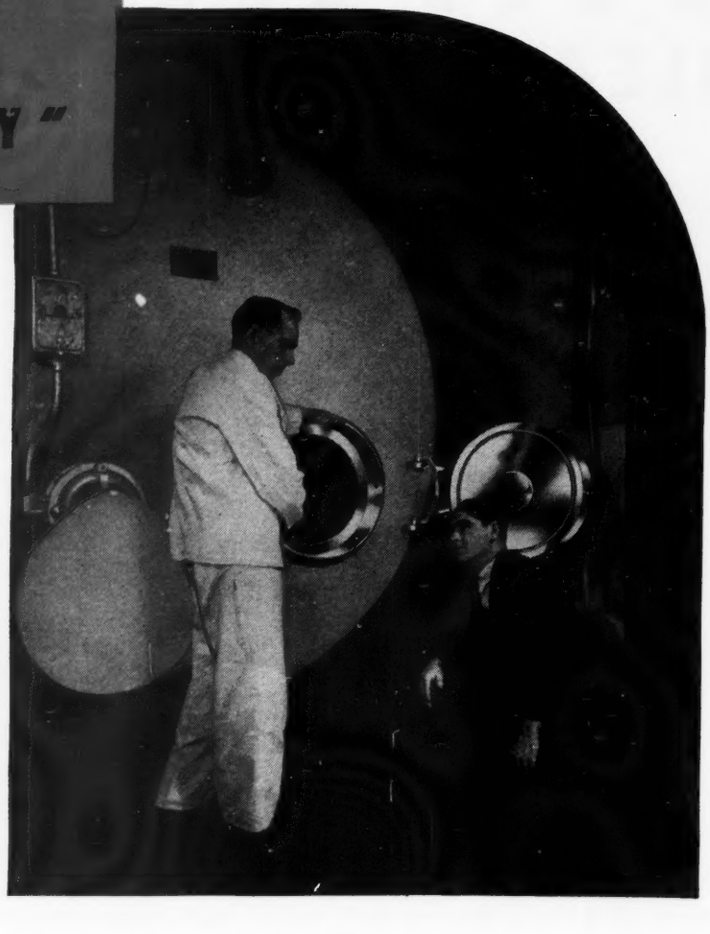
THERE must be good reasons why so many executives in the food industry standardize on Kelly tires. Their experience-sheets show that Kellys give thousands of extra miles, reduce service interruptions materially, and save money all around.

Kellys have six advantages over ordinary tires: Thicker treads of *Vitalized Rubber* double the non-skid life. *Corkscrew Cotton* and *Gum-inforced Plies* multiply blowout protection. *Prime Materials* are used throughout. The *Monitor System* checks every material and process. *Fatigue-proof* wear is achieved by special Kelly processes.

How much do *your* tire-miles cost? Mount Kellys on your trucks and commercial cars at no extra first cost and make new records with your fleet for economical service. See your nearest Kelly dealer. *Kelly-Springfield Tire Company*, 405 *Lexington Avenue, New York.*

KELLY-SPRINGFIELD

"We installed THIS ENDURO TANK in 1929— LIKE NEW TODAY"



"I HAVE NO EQUIPMENT WORRIES NOW THAT WE USE ENDURO," SAYS *Mr. Herrick,*
SUPT. OF THE M. H. RENKEN DAIRY

"We tried out our first all-metal holding tank in 1929," says Mr. A. E. Herrick, for many years superintendent of the M. H. Renken Dairy Company, Brooklyn, N. Y. "Fortunately we selected a tank made of stainless ENDURO. Today that tank is like new, proving that stainless steel is the most satisfactory material for dairy service. • "Naturally we standardized on this metal, for shortly after, we installed two vertical coil pasteurizers made of ENDURO. Then several more holding tanks; followed by four 3,000 gallon truck tanks. And we now have on order another ENDURO pasteurizer. • "We are using nothing but ENDURO for our equipment, for there are no worries associated with it. It never corrodes or discolors and it cleans easily. It cannot contaminate the milk. And it never costs a cent for maintenance, for it cannot crack or chip. It looks to me as though this equipment will last a life-time." • This experience of the Renken Dairy is exactly like that of thousands of dairies now using stainless ENDURO for all equipment needs. It has proved, conclusively, to be the most satisfactory, most economical material for every dairy service. Specify it for every requirement.

ENDURO
REPUBLIC'S PERFECTED STAINLESS STEEL
Licensed under Chemical Foundation Patents Nos. 1316817 and 1339378. ENDURO is sold only through Republic Sales Offices and Authorized Distributors

CENTRAL ALLOY DIVISION MASSILLON, OHIO
REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

Something's gone wrong in Denver!

WHEN temperatures, pressures or levels rise or fall in Denver, or at any other place a few feet or a thousand or more miles from headquarters, Bristol's Metameter records it instantly. A 12-inch chart right before your eyes keeps a continuous record of every fluctuation at the distant point. Any change from normal, whether alarmingly abrupt and large or minute and gradual, is immediately and permanently recorded.

The latest development by the pioneers in telemetering, Bristol's Metameter enables you to control process conditions or operations no matter how distantly conducted. It consists of a transmitter at the location where the temperature or pressure is being measured, an electrical circuit for conveying the impulses automatically sent out by this transmitter, and a recording instrument at headquarters for mechanically translating the impulses received into the continuous charted record.

The *durations* and not the *intensities* of the transmitter impulses are proportional to the values measured. Only a simple two wire circuit is needed. Where available any existing telephone line may be employed without danger of interference with or from conversation carried, inductance or line capacity.

In addition to the large easy-to-read chart, notable features are the use of any kind and frequency of line current, small line current and voltage, freedom from interference by changes in voltage or other line conditions, no exposed contacts, small power consumption, synchronous power sources unnecessary, Bristol's standard measuring elements, self-checking accuracy, self-restoring, and applicability to remote control.

Interesting details are given in a bulletin now on the press. Write for your copy.

THE BRISTOL COMPANY ~ WATERBURY ~ CONNECTICUT

Branch Offices in Principal Cities *Canada: The Bristol Company of Canada, Ltd., Toronto* *England: Bristol's Instrument Co., Ltd., London, S.E. 14*

BRISTOL'S

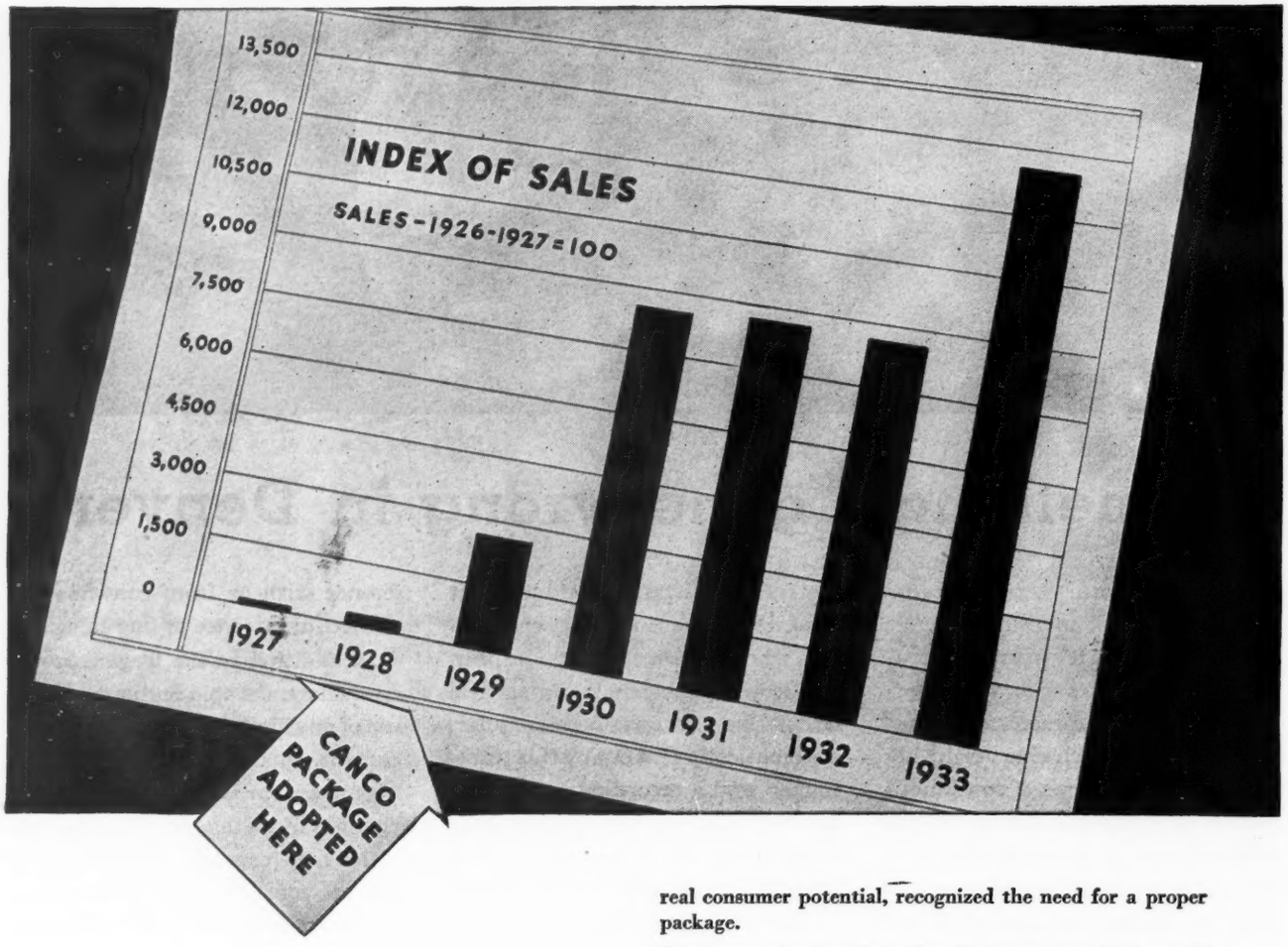
TRADE MARK REG. U.S. PAT. OFF.

METAMETER

FOR TELEMETERING

Can a package help sales?

TAKE A LOOK AT THIS CHART...



"We do not believe it would have been possible without the new package,"
writes this manufacturer's advertising agency

Here's the case history:

For 25 years this product was sold in barrels and drums.

In 1927 the company began to meet isolated cases of consumer demand by putting up product in one-pound paper bags, 100 to the barrel. Slowly, consumer sales increased. In 1929 the company and its advertising agency sensed a real consumer potential, recognized the need for a proper package.

That year, the American Can Company provided a well thought out consumer package. Sales began to soar.

Was the package alone responsible for this product's phenomenal consumer growth? Obviously not. But it did open the door to consumer merchandising, wider distribution. The plan was sound, the product and package were right. Together they did a job.

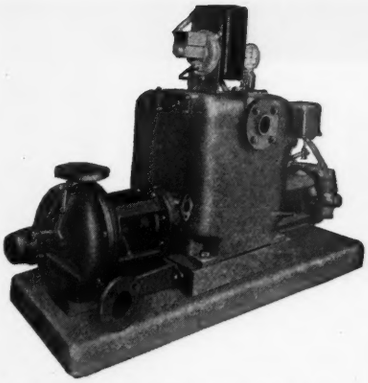
In the bulk product you're interested in may be tremendous package possibilities. Or in your packaged product may be the bigger volume that a *better* package can provide. Canco has built enough successful packages to know how to make a package successful. This knowledge and ability are for you—the moment you give the word.

AMERICAN CAN COMPANY CANCO

San Francisco
111 Sutter Street

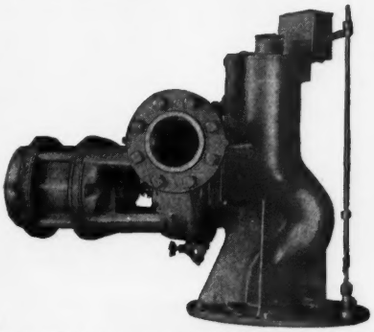
New York
New York Central Building

Chicago
104 So. Michigan Avenue



JENNINGS VACUUM HEATING PUMP

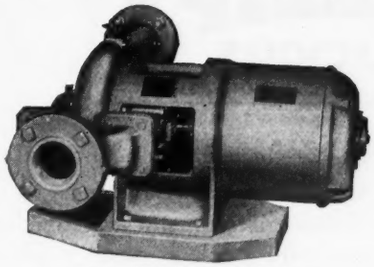
Vapor Turbine type above requires no electric current. Efficiently handles air and condensate from return line heating system, promoting high operating efficiency.



JENNINGS SUMP & SEWAGE PUMPS

PEDESTAL TYPE

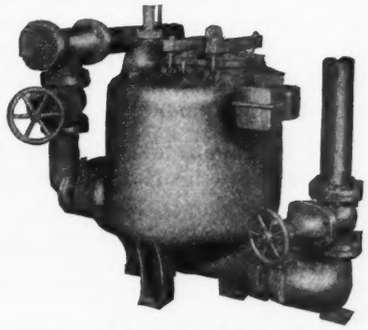
Mounted entirely above the pit cover. Entirely self-priming. All working parts high and dry. Only suction pipe submerged. Economical.



CENTRIFUGAL PUMPS

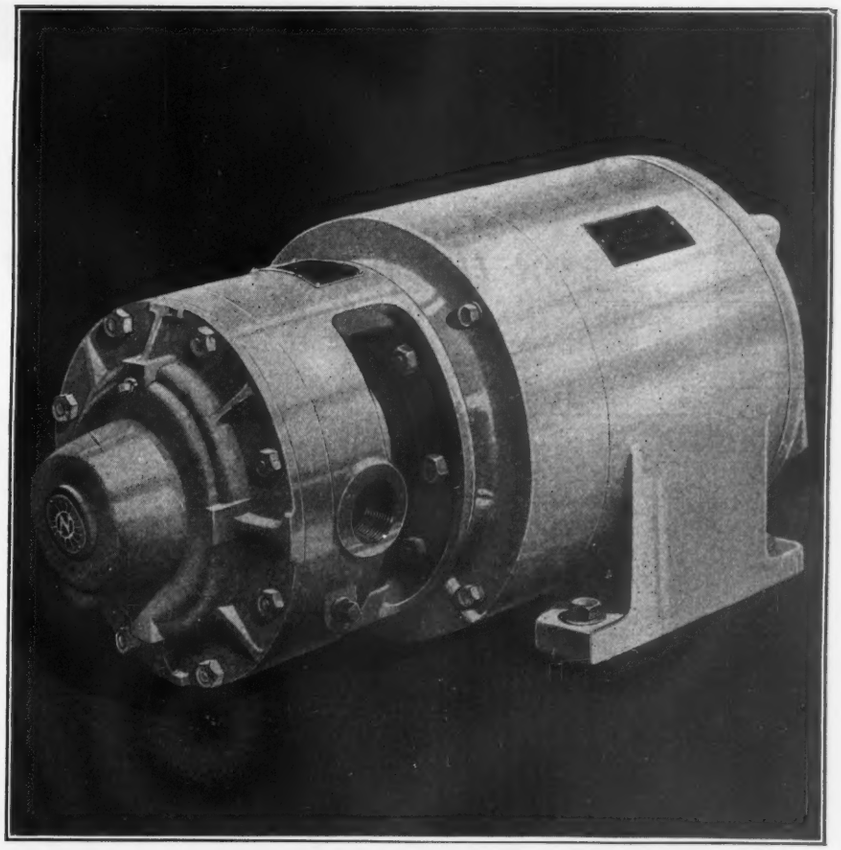
STANDARD AND SELF-PRIMING

Motor armature and pump impeller mounted on same shaft. No bearings in pump casing. One stuffing box. Simple, compact, reliable.



JENNINGS SEWAGE EJECTOR

Most efficient device for pumping unscreened sewage from low levels, or pumping any heavy liquid with large proportions of solids.



There Is a Nash Unit for Every Pumping Service

There is a reason for the many thousands of installations of Nash Pumps. For over twenty years the name Nash has stood for reliability in pumping equipment. From the complete Nash line it is possible to select a superior pump for practically any service.

One of the newer members of the Nash Pump family is the Nash MD Compressor shown above. This pump is especially suitable for the chemical, and foodstuffs field. Only clean air free from dust, heat, or oil, can be delivered for it has no parts in metallic contact, and no internal lubrication. This is important in agitating, blending, moving liquids by pressure displacement, or for maintaining pressure on storage tanks.

This unit furnishes a reliable, non-pulsating supply of clean air at pressures up to 75 lbs. Built integral with its driving motor, it is extremely compact. The unit may be installed anywhere. We have an instructive bulletin telling all about Nash Pumps. Why not get your copy?

NASH ENGINEERING COMPANY

SOUTH NORWALK, CONNECTICUT, U. S. A.

DELICIOUS...*says the LABEL on the pack from these kettles*

Three 400-gal. solid Nickel kettles 4'-0" dia. by 4'-0" deep with conical bottom 7" deep, having 3" nipple for discharge. These kettles are of all welded construction using ¼" thick Nickel sheet. Each tank fitted with a Nickel coil of 2" O. D. x 16 ga. tubing having 4½ turns, 40" dia. which provides 25 sq. ft. of heating surface. The coil stays were made of ¾" Nickel pipe welded so as to permit easy cleaning. Fabricated by Joseph Oat & Sons, Phila., Pa. for the Phillips Packing Co., Inc., Cambridge, Md. for use in the making of "Phillips Delicious" brand Tomato Soup, Tomato Juice, Bean Soup, Asparagus Soup, Celery Soup, Clam Chowder, Vegetable Soup, Vegetable-Beef Soup and Mushroom Soup.

PHILLIPS DELICIOUS

Phillips Packing Company installs
PURE NICKEL KETTLES
to Safeguard the Flavor of 'Delicious' Brand Soups and Tomato Juice

WITH a trade mark that ties 'Delicious' so closely to the firm's name, Phillips Packing Company, Cambridge, Md., takes no chances on flavor.

The three big, gleaming solid Nickel kettles (shown above) were installed in the modern Phillips plant, to be used in making Phillips' 'Delicious' brand Tomato Juice and a whole line of Phillips' 'Delicious' soups, including Tomato, Bean, Asparagus, Celery, Vegetable, Vegetable-Beef, Mushroom, and Clam Chowder.

Pure Nickel equipment offers you every advantage it gives Phillips:

Nickel is absolutely non-rusting and corrosion-resistant.

Nickel has better heat transfer properties than any other commercially available material of comparable corrosion resistance and strength.

Nickel protects foodstuffs against discoloration and off taste.

Nickel equipment is easily cleaned, easily kept sanitary. Sterilizing solutions as commonly used are in no way harmful to Nickel.

Nickel is stronger and tougher than mild steel. It saves replacements and repairs.

These advantages explain why Nickel kettles are so widely used, and why Nickel is also employed as heating coils, steam jacketed vessels, conveyor piping, storage tanks, filling-machinery hoppers and parts, brine mixing and storage tanks and other equipment.

New facts about food plant equipment come to the front every day. It's interesting *and profitable* to read up on these new developments. Send for free copy of "The Use of Monel Metal and Nickel in Food Packing Plants." Write today, to

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET, NEW YORK, N. Y.
Miners, refiners and rollers of Nickel . . . Sole producers of Monel Metal

NEW USES EVERY DAY

FOR THIS STURDY, ECONOMICAL

CLAMP GATE VALVE

Read why all industry is adopting these clamp gate valves in small sizes

● These small, inexpensive iron clamp gate valves fit into a wide variety of jobs . . . industry is finding new uses for them every day. One small part will, in all valve sizes, provide a new thread bushing for the stem. Stem threads are entirely outside the body in the outside screw and yoke type and therefore not subject to action of liquid or gases in the line. Available in screwed or flanged ends, brass mounted for general industrial use and all-iron for corrosion resistant purposes. Complete line of small sizes.

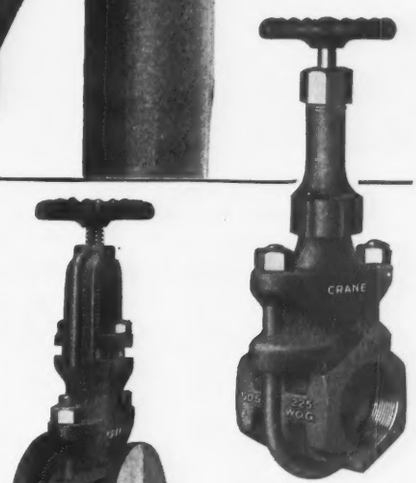
SCORES OF APPLICATIONS FOR THIS VERSATILE VALVE!

Steam Lines	Cold Water Lines	Lubricating and Fuel Oil Lines
Hot Water Lines	Air Lines	Caustic Lines (All-Iron)

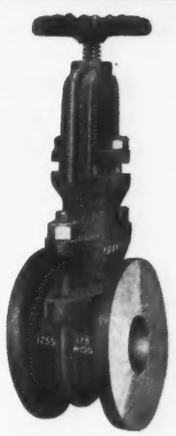
CRANE

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO, ILL.
NEW YORK: 23 WEST 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities



Crane Clamp Gate Valve No. 490—Brass Mounted, Inside Screw



Crane Clamp Gate Valve No. 487½—Brass Mounted, Outside Screw and Yoke

Crane Clamp Gate Valve No. 486½—Brass Mounted, Outside Screw and Yoke

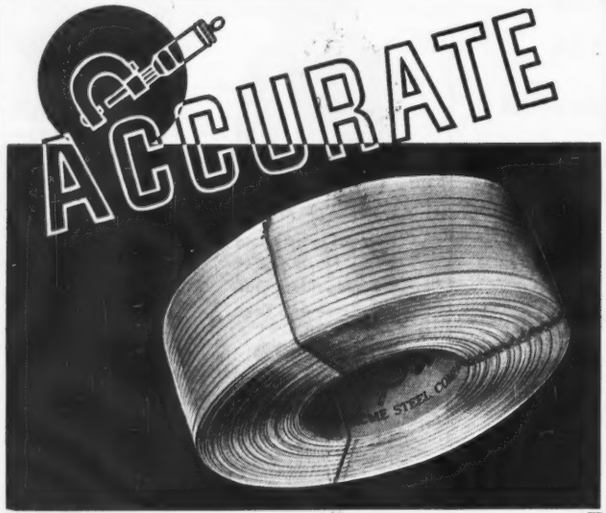
Crane Clamp Gate Valve No. 490½—Brass Mounted, Inside Screw

BACON Packing Exhibit of Wilson & Company, in Agricultural Building, Chicago Century of Progress 1934. Uniforms by Angelica Jacket Co., St. Louis, makers and direct sellers of work garments for industrial employees.

We invite requests for information or for our latest catalog. Address Angelica office nearest you.

ANGELICA JACKET CO.

New York, 104 W. 48th St., Dept. 26 Chicago, 175 N. Michigan, Dept. FD Saint Louis, 1426 Olive Street Los Angeles, 1101 S. Main, Dept. FD



By the exacting Acme method of manufacture, this better stitching wire is unvaryingly accurate in width, thickness, temper. It does a better, faster stitching job. Send for free 5 lb. coil. State size used.

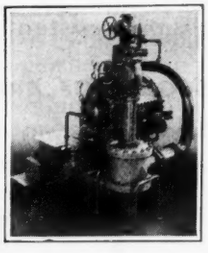
ACME STEEL COMPANY
2845 Archer Avenue, Chicago, Ill.

ACME *SilverStitch*
Reg. U.S. Pat. Off.
STITCHING WIRE FOR FIBRE BOXES

To Settle Your Problem See--- *Vilter* Pioneers in Refrigeration

THE successful application of refrigeration is a highly specialized affair, requiring not only a thorough knowledge of the matter but also the use of modern equipment. We have both the knowledge and the equipment.

The unit type air conditioner illustrated above and described in Bulletin No. 131-R and the rotary compressor for 'booster' service shown at the right and described in Bulletin No. 45 are two cases in point. Free copies on request.



ALWAYS CONSULT:
THE VILTER MANUFACTURING CO.
2115 SOUTH FIRST STREET, MILWAUKEE, WIS.
ESTABLISHED 1867

WHEREVER YOU ARE . . . . WE CAN SERVE YOU WELL

G-E vertical, protected-type motor for deep-well pumping service
G-E splash-proof motor for places where there are splashing or dripping liquids
Typical G-E noncondensing steam turbine-generator set
G-E gear-motor—totally enclosed, fan-cooled—used with dust-tight control, for low-speed applications
75 Sales Offices
25 Service Shops
29 Warehouses
G-E Motor Dealers Everywhere

YOU'LL find it a great convenience, and profitable, to avail yourself of General Electric's complete electrical service for your particular requirements: everything electrical from one manufacturer—from wire, cable, motors, control, to the largest power and generating apparatus. Also, valuable assistance in solving your electrical problems is available through the nation-wide General Electric organization. Our nearest office is ready to help you; or, address General Electric, Dept. 6C-201, Schenectady, N. Y.

FOR RELIABLE, TROUBLE-FREE EQUIPMENT, specify G-E motors and control when you order machinery from your equipment manufacturer.

(Above) G-E synchronous motor and control for refrigeration machinery

(Above) G-E totally-enclosed, fan-cooled motor for applications in dusty conditions

(Right) G-E combination magnetic switch

G-E fractional-horsepower motor for bottling machines, pumps, etc.

020-14

GENERAL ELECTRIC

MIKE★ cuts horse power

● MIKE — the famous light weight but heavy duty MIKRO-PULVERIZER pays for himself in hp. saved ALONE, in a short time — not to mention many other revolutionary advantages.

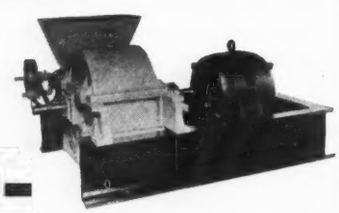
In fact, MIKE operates with 25% to 75% less power consumption. MIKE pulverizes rapidly and economically to the finest mesh with *no* classification auxiliaries (screens, fans, bolters, collectors, etc.) — with NO DUST — and insures absolutely 100% recovery.

MIKE handles with *equal economy* materials that are hard, soft, dry, plastic, gummy, unctuous, fibrous, etc.

Why not get the facts as applied to your products! It costs nothing — creates no obligation. Just send a sample to our laboratory for test and file report.

PULVERIZING MACHINERY CO.
125 GRAND STREET, ROSELLE PARK, N. J.

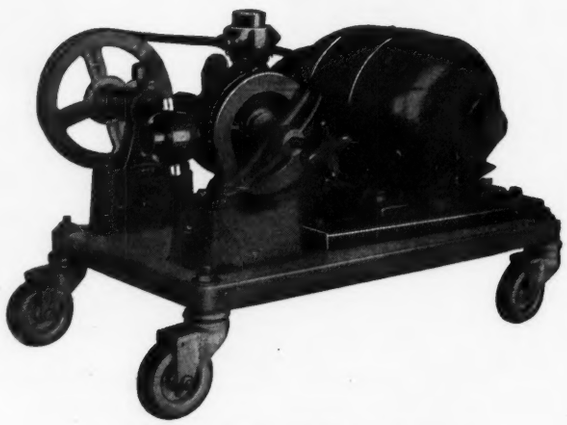
★ There are over 800 MIKRO-PULVERIZERS in use in more than 200 leading foodstuff and chemical plants.



MIKRO-PULVERIZER

Absolutely Dustless • 100% Recovery

REDUCE 1935 Plant Costs with



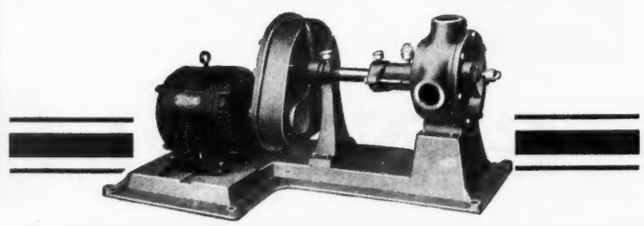
VIKING

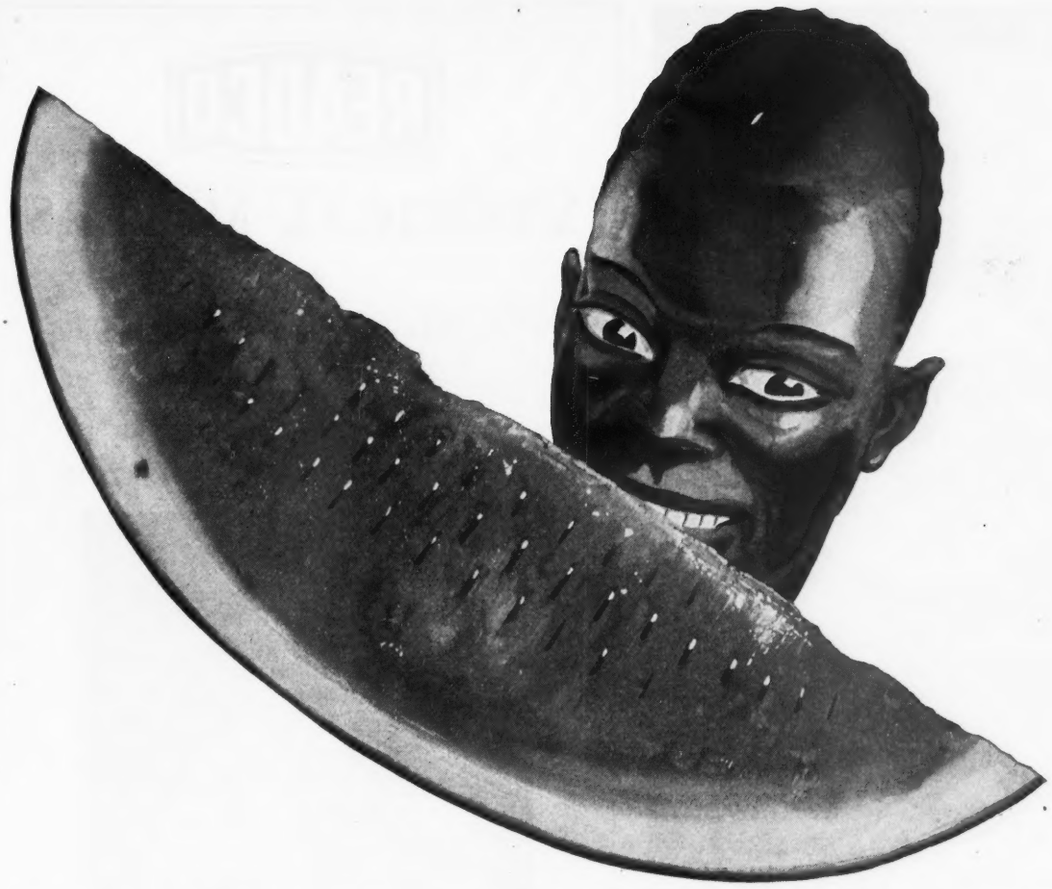
Sanitary *and* Standard Rotary Pumps

It's not a bit too early to start giving some thought to 1935 plant costs. The Viking Rotary Pump . . . both Standard and Sanitary Models insures LOWER PER GALLON PUMPING COSTS. The Viking is economical in original cost . . . it is easy to install . . . it operates with low power requirements. Because of its Patented "Gear Within A Gear" Two Moving Parts Principle . . . the Viking is remarkably free from repair and service . . . is remarkably long in life. Available in all drives, styles and mountings . . . in All-Iron, Bronze-Fitted and All-Bronze constructions. Sanitary Model capacities range from 5 to 90 G.P.M. Regular Models are offered in capacities of 1/5 to 1,050 G.P.M.

Write for complete FREE Viking facts.

VIKING PUMP COMPANY
CEDAR FALLS, IOWA





All God's Chil'un Got Wants

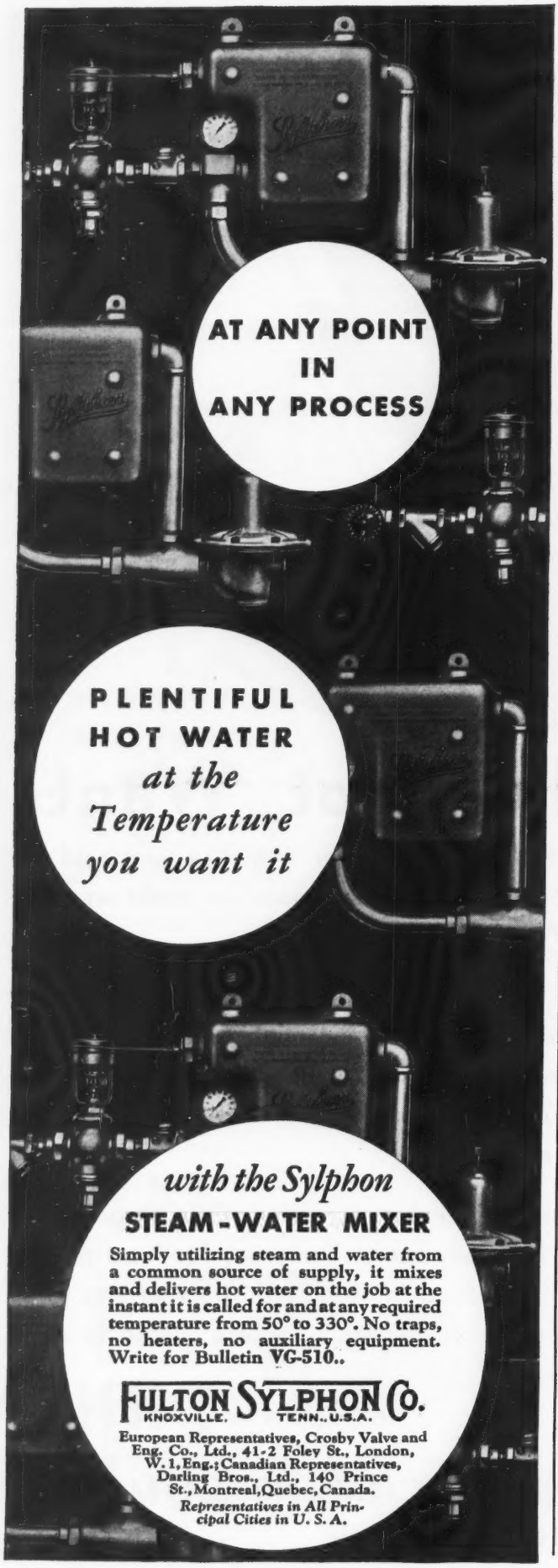
KVP
FOOD PROTECTION PAPERS

The other day a customer wrote us and said he wanted some good Negro sermons — could we help him out. We could and did.

Now of course we are not in the business of supplying sermons, although some mighty good ones have been written on KVP Bond. That was just a "happenstance" that enabled us to give a little extra service to an old friend.

Our business is making paper — GOOD papers of many kinds for many uses. Some are for food protection purposes. Indeed the food industry knows us to be experts in protection papers. You are invited to share our experience.

KALAMAZOO VEGETABLE PARCHMENT COMPANY
PARCHMENT **[KALAMAZOO COUNTY]** **MICHIGAN**


AT ANY POINT
IN
ANY PROCESS
PLENTIFUL
HOT WATER
at the
Temperature
you want it
with the Sylphon
STEAM-WATER MIXER
Simply utilizing steam and water from a common source of supply, it mixes and delivers hot water on the job at the instant it is called for and at any required temperature from 50° to 330°. No traps, no heaters, no auxiliary equipment. Write for Bulletin VG-510..
FULTON SYLPHON Co.
KNOXVILLE. TENN., U.S.A.
European Representatives, Crosby Valve and Eng. Co., Ltd., 41-2 Foley St., London, W. 1, Eng.; Canadian Representatives, Darling Bros., Ltd., 140 Prince St., Montreal, Quebec, Canada.
Representatives in All Principal Cities in U. S. A.

READCO

VERTICAL MIXERS

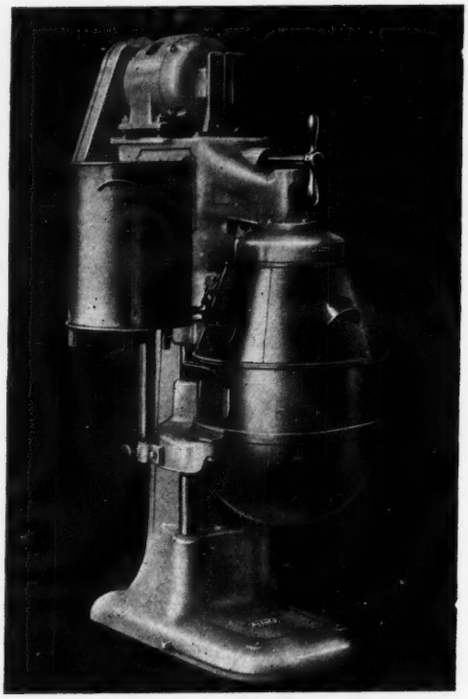
for

MAYONNAISE

and

SALAD DRESSING

INSURING PERFECT EMULSIFICATION



THE leading mayonnaise and salad dressing manufacturers of this country use Readco Machines for the successful production of their products.

In the successful manufacture of mayonnaise, the first and most important factor is to emulsify thoroughly the oil with the remainder of the ingredients.

The mixing action of the Readco 3-speed Mayonnaise-Mixer, which is a whip or beater revolving with a double whirling motion inside of a mixing bowl, gives to the batch the most thorough beating or whipping obtainable.

A swinging bracket fastened to the side of the machine supports a graduated oil container, which is provided with a faucet, permitting a regulated flow of oil while mixing the batch. A hood with an opening for the oil faucet fits into the bowl and is provided with hinged sections, giving a spacious opening for adding ingredients.

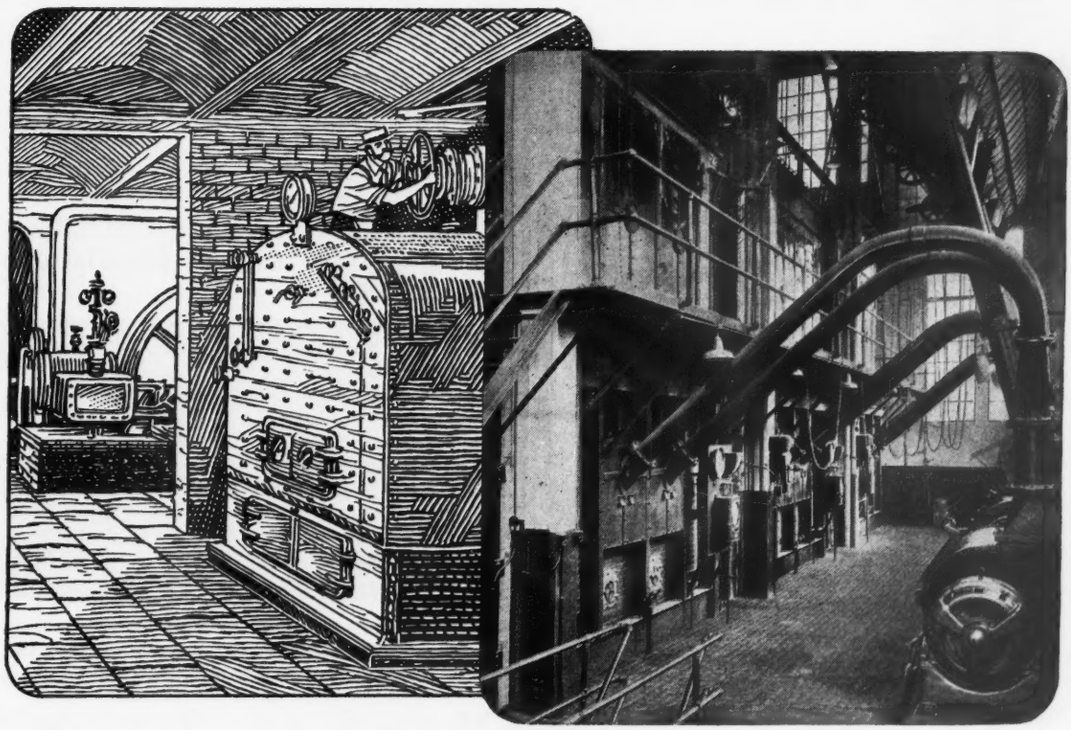
Write to us for complete information.

READ MACHINERY CO., Inc.

Makers of Baking and Mixing Equipment

YORK, PENNA.

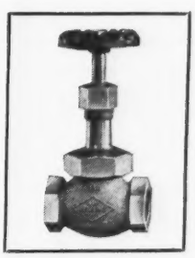
Through Forty Calendar Changes



"We have been using Jenkins Valves for over forty years, and believe that some of these have been in service since our first steam operation"
Albrecht Manufacturing Co.

FORTY years ago! Why, within that time the whole world has changed. Aircraft and submarines, radio and talking pictures, automobiles and motor-ships, refrigeration and air conditioning, streamlined trains and eighty story buildings, were only the vague dreams of visionaries when Albrecht first bought Jenkins Valves.

Yet through these four decades of ceaseless change Jenkins Valves have kept pace with industry's ever changing demands, and have maintained a steadily growing reputation for integrity. Jenkins Valves today, as in the past, are notable for advanced engineering, sound construction, and extraordinarily satisfactory service.



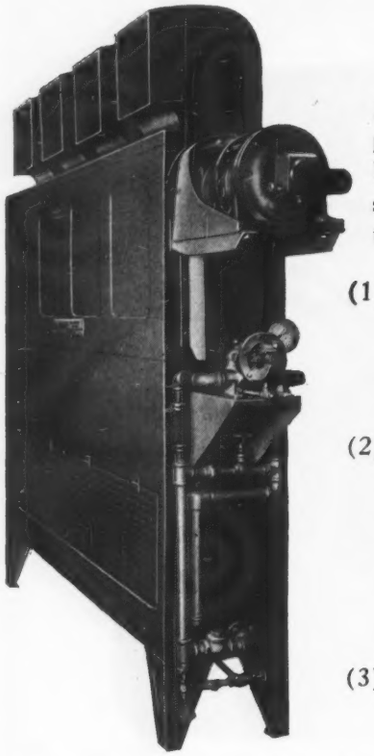
How Jenkins Bros. is paralleling engineering and industrial progress with advanced valve design and new valve types is convincingly portrayed in the new Jenkins Catalog No. 23. In contrast to the comparatively few types and patterns available to the valve buyer forty years ago, this catalog shows approximately five hundred different valves. There is a trustworthy "Jenkins"—of bronze, iron, or steel—to meet the needs of 1935.

Jenkins Bros

JENKINS BROS., 80 White Street, New York, N.Y.; 510 Main St., Bridgeport, Conn.; 524 Atlantic Avenue, Boston, Mass.; 133 No. Seventh St., Philadelphia, Pa.; 822 Washington Boulevard, Chicago, Ill.; JENKINS BROS., Limited, Montreal, Canada; London, England

JENKINS VALVES • SINCE 1864 • BRONZE • IRON • STEEL

Triple-Purpose Unit Air Washers



For the food plant particularly this Buffalo Unit Air Washer is desirable. It's really a triple-purpose unit—

(1) It cleans the air—removes dust and dirt common in all plants—usually a problem in food plants.

(2) It provides the same degree of cooling in hot weather as is obtained from the larger conventional types of air washers—and humidifies the air in cold weather.

(3) It provides clean, heated air during the heating season.

Available in several sizes in both floor type (Illustrated) and flat suspended type, Buffalo Unit Air Washers give year 'round satisfaction for industrial cooling, heating and humidification. Let us send you a copy of Bulletin 2840.

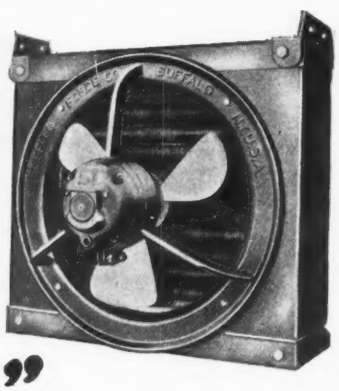
Other Unit Heaters—Gas and Steam

Of course, Buffalo Unit Heaters are available in several other styles for both gas and steam. Illustrated here is the Breezo-Fin, a high-efficiency suspended type unit—strong enough to stand any kind of handling, light enough to be practical and low in price. You can buy these and other Buffalo Unit Heaters with full assurance that they are not experimental in any way—but are full size, full capacity units which will provide economical heating.

Write for Catalog 469.

BUFFALO FORGE CO.
181 Mortimer St.
Buffalo, N. Y.

In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.



"Buffalo" Gas and Steam —Unit Heaters

Designed to meet every Conveying need for Food Manufacturers

LA PORTE FLEXIBLE LONG WEARING STEEL CONVEYOR BELTS

• • • Find out now how you can get dependable conveying service for your food needs with LaPorte sanitary Flexible Steel Conveyors. LaPorte performance includes, maximum in sanitation, reduced costs, and long time service regardless of the handling need.

Its square mesh, no-stretch construction and durable edge-finish assures successful results whether for liquids or solid materials. Corrosion, acid and heat-resisting. Obtainable in any length and practically any width. Investigate!

LA PORTE
Mat and Manufacturing Co.
LA PORTE INDIANA

YOUR SAFEST INVESTMENT

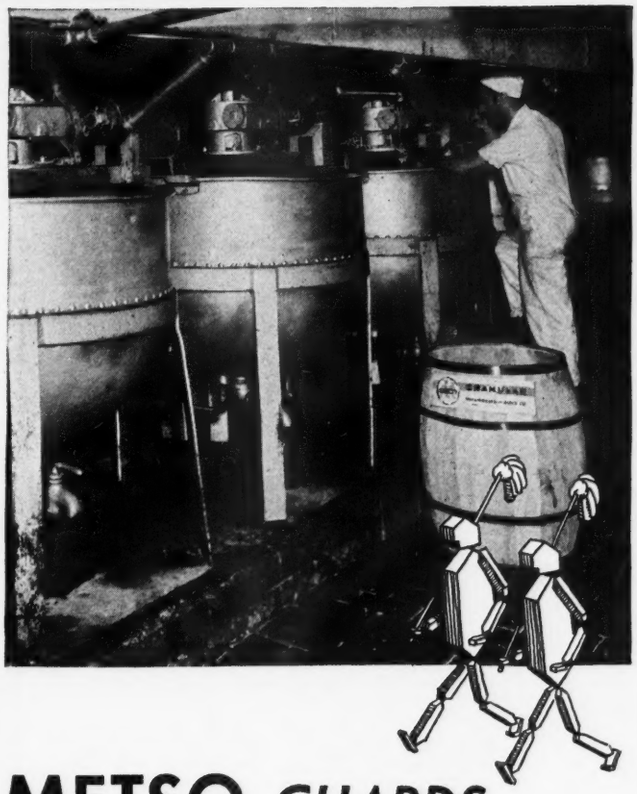
Retrenchment has gone out of style. The Food Industry is looking ahead and seeing an increasing demand. Old, corroded equipment is being scrapped and new, modern, acid-proof Duriron installed . . . as our orders will testify.

Standard equipment procurable in Duriron, or any of the chromium-nickel (stainless) steels, consists of plunger pumps, centrifugal pumps, both standard and self-priming, valves of all sizes and types, pipe and fittings, tank outlets, as well as special equipment made to your order.

Everything we make is acid-resisting. We are specialists in problems of corrosion and contamination. With trained Technical Men representing us in all principal cities, we are prepared to render you an invaluable service in the modernization of your plant.

THE DURIRON COMPANY, Inc.
440 N. Findlay St. Dayton, Ohio

DURIRON



METSO *GUARDS METAL SURFACES*

ARE you etching your equipment's life away with uncontrolled cleaners?

Kettles, vats, coolers, tanks and other vessels are kept sparklingly clean day in and day out with Metso, Sodium Metasilicate. Its active cleaning energy removes all the dirt quickly. At the same time, Metso has a restraining influence, called inhibiting power, that curbs corrosive effect.

Hundreds of food plants have switched to Metso for this advantage alone. They also value its speed and economy.

Your request for more information will have prompt attention.

PHILADELPHIA QUARTZ COMPANY

General Offices and Laboratory: 125 S. Third St., Philadelphia, Pa.
Chicago Sales Office: 205 W. Wacker Drive. Stocks in 60 cities.
Sold in Canada by NATIONAL SILICATES LTD., Toronto, Ontario.

METSO QUICK, THOROUGH CLEANERS CLEANING AT LOWER COST

REG. U.S. PAT. OFF.

An INTOLERABLE Situation!

● Few executives in the Food Industry realize that stub-pencil records are behind many of the facts on which they base important decisions. We refer specifically to hand-written weight-records.

Human errors have always been a notorious menace to accuracy. They are particularly dangerous in the original recording of basic weights, on which the accuracy of quantities received, batching operations, quality-control, and shipments to customers depend.

Yet, too often, the accuracy of these important records is still dependent on the eyesight, memory and handwriting of the Man at the Scale.

A Permanent Solution—The Toledo Printweigh forever eliminates human errors in weight-recording. It certifies the accuracy of your weight-records by delivering a legible, machine-printed record of each weight. It prints on tickets, forms or strip-tapes. It furnishes from one to four copies in less than 1/10 second.

A Practical Suggestion—We urge that you investigate Printweigh's many profit-protecting features. Write for a copy of "Progress in Industrial Weighing"—a condensed fact-summary of printed weight-recording.

Better still, see **"On Guard"**—a 20-minute Toledovision talking picture, which presents Printweigh quickly, concisely, authoritatively. Simply instruct your telephone operator, "Phone the nearest Toledo Scale Company office to send over On Guard." A Toledovision operator will handle all details. The presentation will be made at your convenience, in your own office. No obligation, of course.

TOLEDO SCALE COMPANY
TOLEDO • OHIO
NO SPRINGS • HONEST WEIGHT
181 SALES AND SERVICE OFFICES THROUGHOUT U. S. AND CANADA

When the nation marveled at the first tunnel under the Hudson River . . .

ON MARCH 11, 1904, *the first tunnel under the Hudson River, connecting New York and New Jersey, was completed.*

ONE OF THE ROOMS *in the Merchant's Ice & Storage Company plant that was insulated with corkboard in 1904. Frozen products are kept in this room at —6 degrees F.*

Engineers insulated cold rooms with corkboard that's still IN SERVICE!

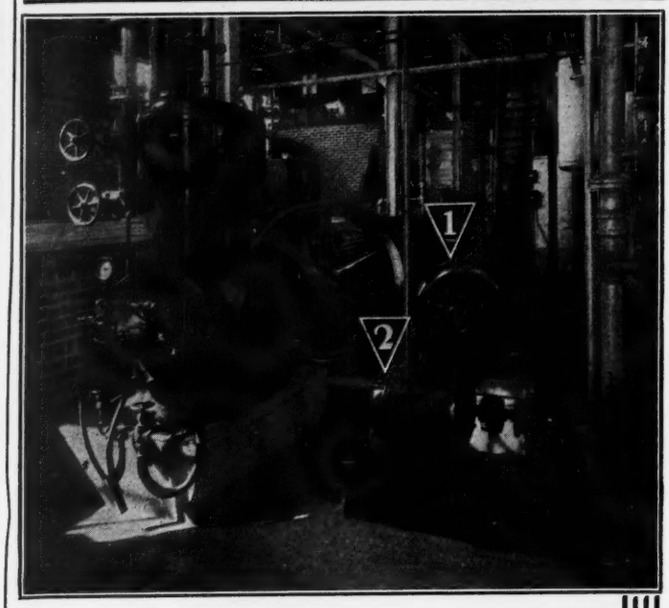
TODAY—as 30 years ago—the corkboard installed in the Merchant's Ice and Cold Storage Company plant in San Francisco is on the job! Even during the earthquake and fire of 1906, the plant ran continuously. The rooms—insulated with more than 100,000 board feet of Armstrong's Corkboard—have been under freezer temperatures continuously, twenty-four hours a day, year in and year out.

A remarkable record! But not an unusual one in the history of corkboard. This installation is typical of hundreds of jobs which have given satisfactory performance over a long period of years. And the Armstrong's Corkboard you install today is even more efficient than that which has served so successfully in thousands of plants during the past three decades.

Before choosing *any* insulation for your cold rooms, it will pay you to investigate carefully the unusual and unmatched advantages of Armstrong's Corkboard. Where conditions are unusually severe, Armstrong offers Super-Service Corkboard. Like all Armstrong's Cork Insulation it is 100% pure corkboard. And it's sealed on both faces with a coating that's impervious to air and moisture infiltration. For complete information, write to Armstrong Cork & Insulation Company, Insulation Division, 948 Concord Street, Lancaster, Penna.

Armstrong's CORK INSULATION

for all cold rooms and cold lines



1 *Century 60 HP, Type SCH Squirrel Cage Induction Motor, V-Belt Connected to Compressor*

2 *Century 5 HP, Type SC Squirrel Cage Induction Motor Direct Connected to Pump*

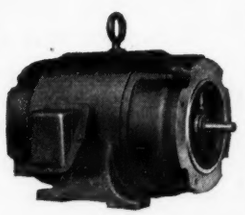
A Leading Part in Air Conditioning

Refrigerators...Compressors...Pumps...Fans...Blowers...Ventilators—in driving this and similar air-conditioning equipment Century Motors play a leading part. Many of them have been steadily on the job for more than 30 years—all of them set a conspicuous record in meeting the service requirements so essential in air-conditioning and refrigeration installations . . . Consult Century Engineers.

Single Phase...Polyphase...Direct Current...Single Speed, Multi-Speed—1/250 to 600 Horse Power.

CENTURY ELECTRIC CO.
1806 Pine St., St. Louis, Mo.
Offices and Stock Points in Principal Cities

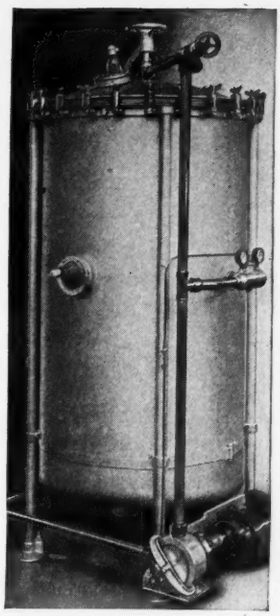
Century 60 Horse Power, 1200 r.p.m. 60 Cycle, 220/440 Volt, Squirrel Cage Induction Splash Proof Motor. Two-way Ventilation.

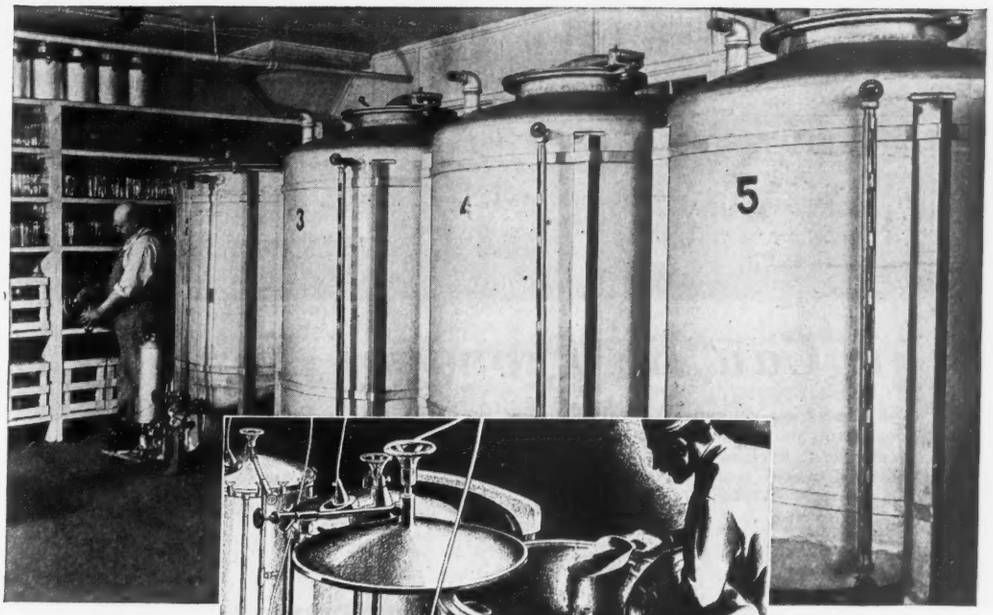


Century 3 Horse Power, 60 Cycle, Ball Bearing, Flange Mounting Splash Proof Motor.

Century MOTORS

Flavor Concentrates
MADE THE PFAUDLER WAY COST LESS





Above, at left—Pfaudler "Pre-Vak" Glass-Lined Percolator.

Above—Glass Lined Tanks for the Storage of Vanilla Extract.

Pfaudler Equipment can help you make better—

BABY SOUPS
BAKED BEANS
BEER
BUTTER
CHILI SAUCE
COFFEE EXTRACT
CONDENSED MILK
FRENCH DRESSING
GELATINE
JAMS
JELLIES
KETCHUP
LINSEED OIL
MALT
MARMALADE
MAYONNAISE
PECTIN
PINEAPPLE JUICE
SAUCES
SAUERKRAUT
SALAD DRESSING
SOUPS
TOMATO PASTE
TOMATO PULP
TOMATO PUREE
TOMATO JUICE
VANILLA EXTRACT
VEGETABLE OILS
YEAST CULTURE
YEAST LIQUOR

THE introduction of the Pfaudler "Pre-Vak" process of extraction cut costs many times by reducing extraction time to 1-30 of the time formerly required. Stronger, clearer extracts are now obtained, evaporation losses are reduced. Filtration is now carried on during percolation under most sanitary conditions. Truly, a revolutionary accomplishment.

Recently, an extract manufacturer came to Pfaudler with the problem of devising a method and designing equipment that would produce a ten fold extract. Today that extract manufacturer is making a ten fold extract in Pfaudler glass lined equipment—economically. Besides gaining tremendous sales advantage this manufacturer reduced cost of manufacture by eliminating a considerable part of the tax on alcohol.

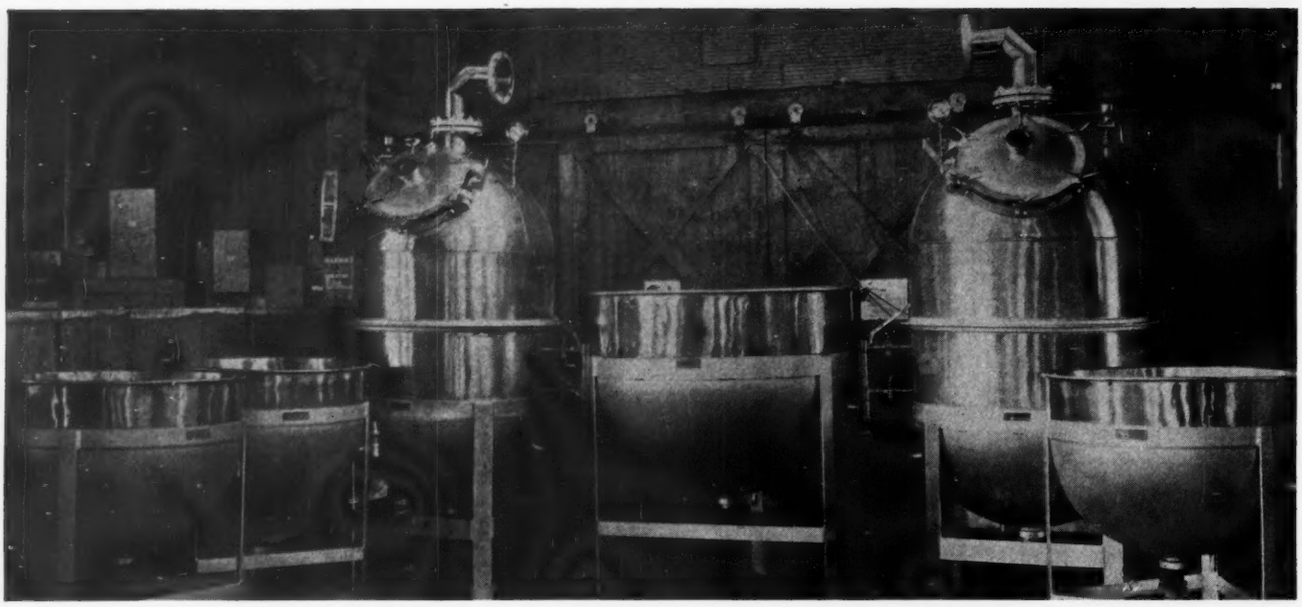
Here is another in a long list of special problems that Pfaudler engineers plus glass lined equipment have solved. Isn't it about time we got together to see how we can help each other?

THE PFAUDLER CO. 1510 GAS & ELECTRIC BLDG., ROCHESTER, N. Y.

Branch Offices: New York City, Chicago, Philadelphia, San Francisco (Pfaudler Sales Co.)

PFAUDLER *glass-lined steel* EQUIPMENT

MULTIMIXERS • TOMATO PRODUCTS COOKERS • PERCOLATORS • MAYONNAISE MIXERS • VACUUM PANS • SOUP KETTLES • BEAN SOAKERS



You Can Be Proud of Your LEE Equipment

Lee food processing equipment is fabricated by master craftsmen, beautifully finished, looks as good as it is. You'll never need apologize to a visitor for the appearance of Lee equipment —never need make excuses to your board of directors for its selection.

Let us show types of Kettles, Pans, Tanks, Bowls, etc., we've built for prominent food processing concerns in this country and abroad—show you why Lee equipment is preferred in many plants.

Above are 2—42-in. dia. Vacuum Pans, 1—250-Gal. and 3—80-Gal. Steam Jacketed Kettles made of Enduro KA-2-S for the C. H. Musselman Company, Biglerville, Pa.

We can build quality, beauty and efficiency into your equipment. Write for details.

LEE METAL PRODUCTS CO.
370 West Pine St., PHILIPSBURG, PENNSYLVANIA

PROFESSIONAL SERVICES

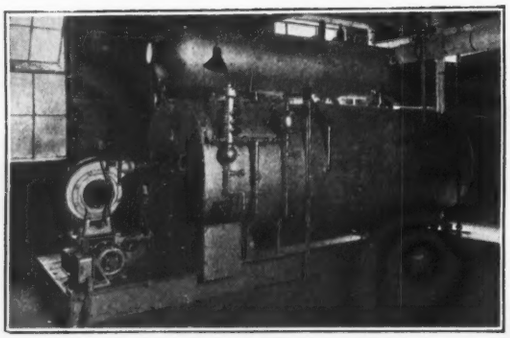
Skinner & Sherman
Incorporated
Chemists and Bacteriologists
Analyses, Research, and Consultation on Foodstuffs and Manufacturing Processes.
246 Stuart Street
Boston, Mass.

Pacini Laboratories, Inc.
Exclusively devoted to the chemistry of food and nutrition; specialists in vitamin assays, in the devising of new foods, in the correcting of old foods, and in every phase of industrial food chemistry.
155 East Ohio Street
CHICAGO, ILLINOIS

FOOD RESEARCH LABORATORIES, Inc.
Dr. Philip B. Hawk, President
Biochemists to the Food Industries
Vitamin Assays
114 East 32nd Street, New York

PEASE LABORATORIES, Inc.
Food Processing, Nutritional, Chemical and Bacteriological Research
39-41 West 38th St., New York City

Low Cost Steam! . . WITH AN OIL BURNING BOILER



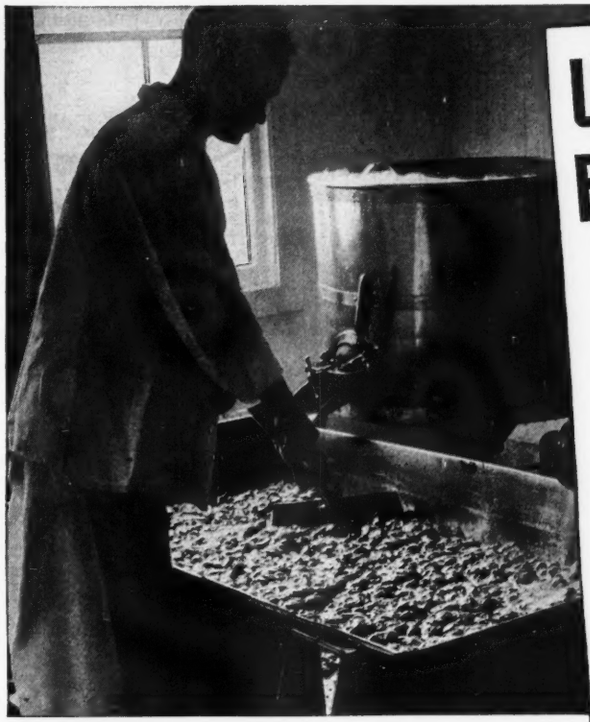
A CLEVELAND MILK PLANT

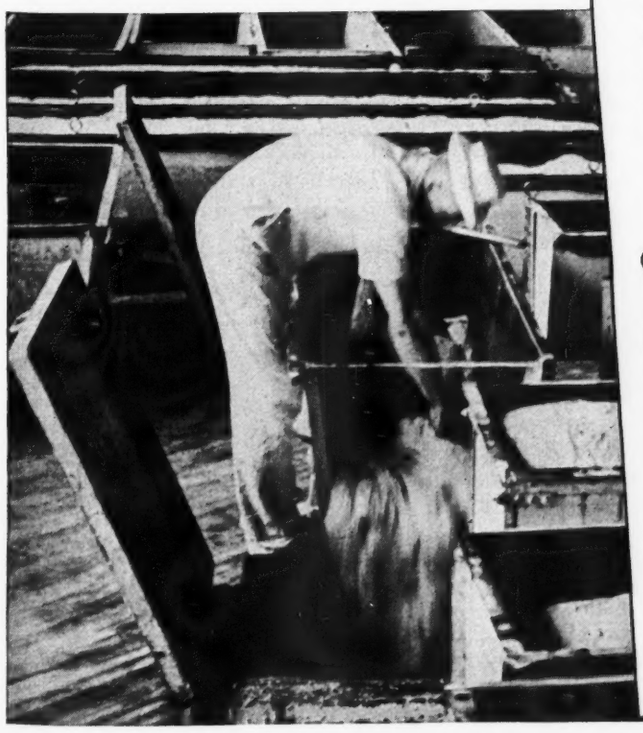
NO EXPENSIVE STACK OR BRICKING . . .
NO ASHES—NO DIRT . . . USE LESS SPACE

Oilbilt Units produce steam for processing, power or heating at low cost because they are designed for the fuels used.
Sizes from 5 H.P. to 500 H.P. for light oils, heavy oils or gas.
Let us help solve your steam generating problems. Write today for catalog and details.
Cleaver-Brooks Company, 129 West Wells Street, Milwaukee, Wisconsin

Oilbilt STEAM GENERATING PLANTS *"The Modern Plant"*

For Low-Cost Quality Insurance





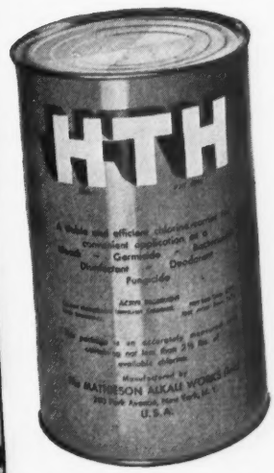
USE HTH ON ALL YOUR FOOD HANDLING SURFACES

HUNDREDS of leading food manufacturers have adopted the "quality insurance" that only micro-cleanliness with HTH can provide. They find that it pays dividends every day by preventing trouble before it occurs.

HTH is a dependable chlorine sterilizer—the only kind of sterilizer (except steam) that is safe for use on food equipment. Unlike steam, HTH solutions cause no expansion strains—there are no living bacteria left behind due to rapid condensation on cool surfaces—no danger of scalding and added dampness around the plant. HTH makes a non-poisonous rinse that leaves no objectionable taste or odor. Read the list below. It shows how widely HTH is being used throughout the food industries. If you've never tried chemical sterilization with HTH, ask your supply house to send you a trial case of a dozen 4-lb cans to make a thorough test.

The MATHIESON ALKALI WORKS (Inc.)
250 Park Avenue **New York, N. Y.**

Soda Ash . . . Liquid Chlorine . . . Bicarbonate of Soda . . . HTH and HTH-15 . . . Caustic Soda . . . Bleaching Powder . . . Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide.



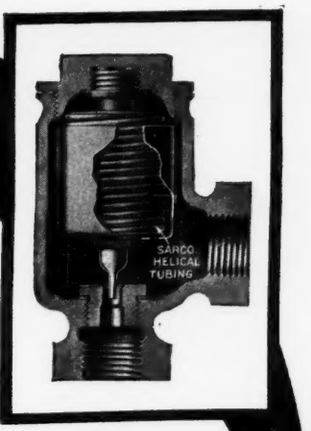
HTH is a highly concentrated calcium hypochlorite for making germicidal solutions, either alone or in combination with soda ash. HTH is packed in 4-lb. cans, one dozen to the case. Each can makes 30 gallons of a concentrated supply solution, containing 1% of available chlorine, at a cost of about 5¢ a gallon.

●

HTH Sanitation is steadily becoming the standard practise with these producers of food products:

Bakeries
Bottling Plants
Breweries
Canneries
Cheese Plants
Creameries
Distilleries
Fish Packing Plants
Ice Plants
Ice Cream Plants
Meat Plants
Milk Plants

Machines Do More Work..... Operating Cost Is Reduced



Machines cannot operate at rated capacity if the flow of live steam is interrupted by condensation and air.

By equipping each machine with Sarco Steam Traps, condensation and air will be removed as fast as formed, permitting a steady flow of hot, dry steam.

No water will be held up in the coils of one unit by back pressure in the return piping from another machine, which happens with large centrally located traps. Consequently machines work more efficiently with less fuel when equipped with

SARCO STEAM TRAPS

Individual trapping prevents waste of heat by radiation from long connecting lines and prevents overheating the workrooms.

There is no danger of freezing with Sarco Traps on the job, because they drain themselves when steam is off.

They are closed by steam and opened by condensation. No live steam can escape.

Sarco Steam Traps are low in first cost and in upkeep. Can be screwed into the pipe line.

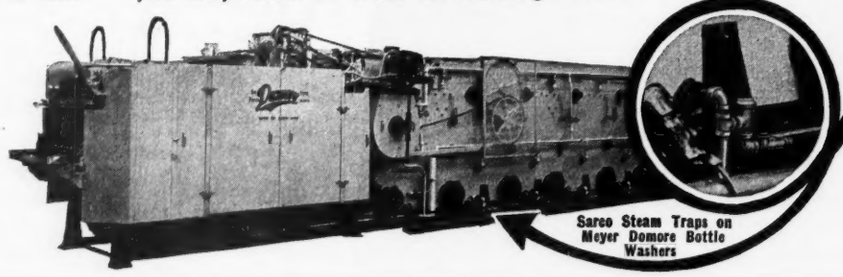
Try a Sarco for 30 days on us. If not satisfied, you may return it. Write for Catalog AE-95.

SARCO CO., Inc.

183 Madison Ave., New York, N.Y.

Branches in Principal Cities

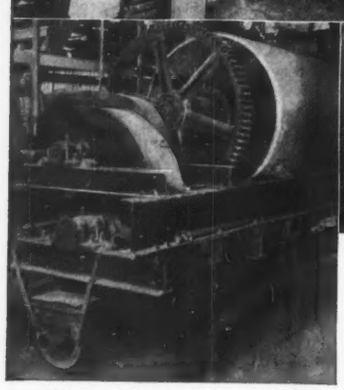
SARCO CANADA, LTD., Federal Bldg., Toronto, Ont., Can.



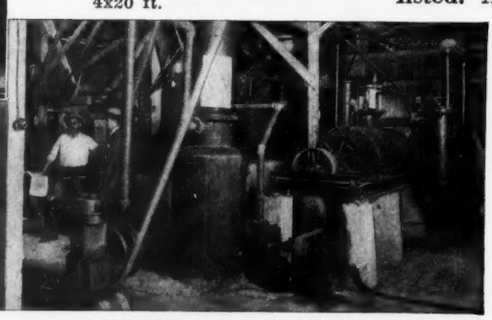
Sarco Steam Traps on Meyer Domore Bottle Washers

Difficult Drying Problems Solved

by STOKES VACUUM ROTARY DRYERS



Fish meal dryer, equipped with dry material conveyor.



(At Left)—Three of a battery of eight starch dryers, each 4x20 ft.

In Maine, Iowa and Mexico for example, these STOKES Dryers proved to be the answer to the particular drying problem involved. (See captions.) Nearly 40 years' experience may enable us to make worthwhile suggestions not only on your drying equipment problems but on those requiring any of the equipment listed. A plant scale laboratory permits us to demonstrate our recommendations. Consultation entails no obligation.

FJS

(Left) Drying "Nixtamal" flour in a Mexican mill.

STOKES Equipment for the Food Field

Vacuum Rotary Dryers
Vacuum Pans and Stills
Evaporators
Mixers
Solvent Recovery Apparatus
Vacuum Shelf Dryers
High Vacuum Pumps
Drum Dryers
Extractors
Autoclaves
Condensers
Tube Filling Equipment
Jar and Can Filling Equipment
Powder Filling Equipment
Tablet Machines
Water Stills
Vacuum Fumigators
Special Process Equipment

FJS STOKES MACHINE COMPANY

Process Equipment Since 1895

5976 Tabor Road, Olney P. O., Philadelphia, Pa.

New York Office: 103 Park Ave. Cincinnati Office: 230 Wilmuth Ave. Los Angeles Office: 1231 E. 7th St.

PREMIUM
Personality . . .

Macbeth Tumblers . . . "Chip-Proof" or Shell Type . . . with or without platinum or gold rims, are now available, in all standard sizes, with your name, trade mark or any desired decoration or marking embossed on each glass in your choice of colors. The advertising value of such personalized premiums is evidenced by their wide use by well-known firms. Complete description and estimates will be furnished on request.

MACBETH
Trade-marked Tumblers

Macbeth-Evans Glass Company

Charleroi, Pennsylvania

JALOLD TIN PLATE

FOR SEVERE REQUIREMENTS

Jones & Laughlin cold rolled special purpose tin plate is more uniform to gauge, has a smoother surface, and a greater adaptability for severe drawing operations than any tin plate previously produced.

J&L STEEL

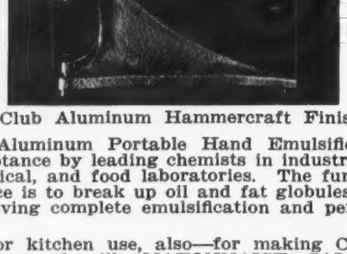
JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Erie Los Angeles Memphis Milwaukee Minneapolis New Orleans New York Philadelphia Pittsburgh St. Louis San Francisco

AT LAST—

A PORTABLE HAND EMULSIFIER

No Laboratory Is Complete Without It — HOMOGENIZES



Indispensable In Research Work On Liquids — EMULSIFIES

Club Aluminum Hammercraft Finish

The Club Aluminum Portable Hand Emulsifier is finding ready acceptance by leading chemists in industrial, chemical, pharmaceutical, and food laboratories. The function of this handy device is to break up oil and fat globules under great pressure, giving complete emulsification and permanent suspension.

Designed for kitchen use, also—for making CREAM from melted butter and milk, MAYONNAISE, SALAD DRESSINGS, CREAMED GELATINS, EGG NOGS, and a wide range of favorites.

Substantially made of pure molded aluminum, with stainless steel piston and chrome-plated parts, the device should last for years with ordinary care. Very reasonably priced at $4.95, postpaid.

CLUB ALUMINUM PRODUCTS COMPANY
1439 Merchandise Mart, Chicago, Ill.

check

Gentlemen: I enclose money order for which please send me by prepaid parcel post. .....Club Aluminum Portable Hand Emulsifiers.

Name .....

Street Address .....

City ..... State.....

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Everybody **wants—needs—demands—fresh air! It eases and increases production, makes work healthier, protects lives.**

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BENDIX PRODUCTS CORPORATION
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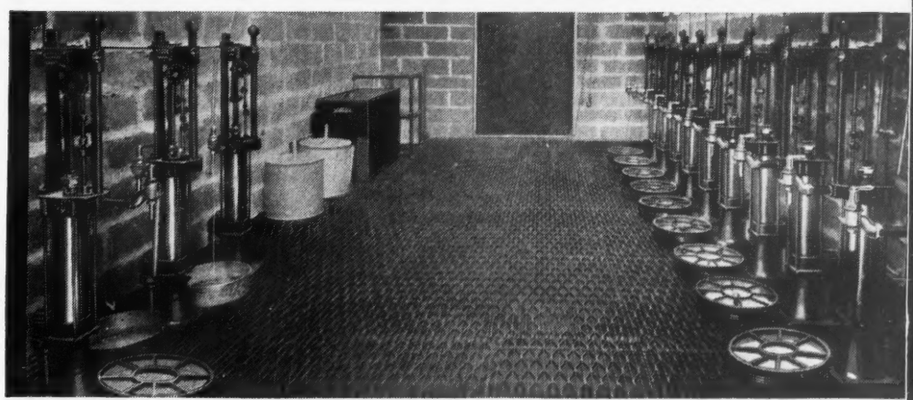
BENDIX FANS

Do YOU KNOW how much the quality and economy of your entire plant's lubrication depend on the . . . STORAGE and HANDLING of LUBRICANTS?



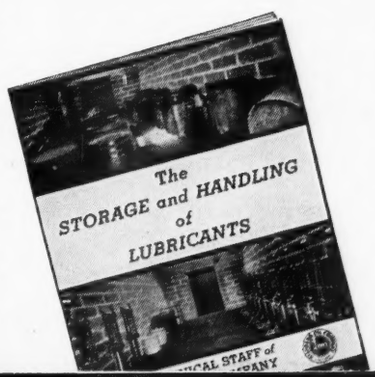
A LUBRICANT in use is nothing more than a flexible, constantly renewing, slippery film placed between moving surfaces to keep them from grinding together with resultant wear, heat, and tremendously increased power consumption. One basic requirement naturally is that the lubricant must be clean. The presence of dirt or moisture in a lubricant has harmful effects which are not generally understood. Care in storage and handling is just as important as clean delivery to your plant. The following excerpts from a paper prepared by the Technical Staff of the Standard Oil Company (Indiana) are interesting:

"The presence of dirt or moisture may considerably change the chemical nature of lubricants . . . dirt, especially has the effect of converting the lubricant into a grinding compound . . ."

" . . . Lubricants may be stored in too hot or too cold a place where the temperatures may tend to break down any compounding in the lubricant."

(Both Tank Car Storage and Barrel Storage are treated in detail and practical suggestions given.)

(Six precautions are listed which should be observed in unloading tank cars—with specific instructions for unloading tank cars in cold weather.)



"In addition to foreign contaminants, the mixing of different grades of oil will often cause lubrication difficulties . . ."

(Practical suggestions are given for the removal of contaminants, and the rules of safety which must be observed in cleaning tanks.)

"The location of oil rooms and dispensing equipment will usually affect the lubrication obtained, where individual operators are responsible for lubrication."

(The dispensing and distribution of lubricants is completely treated.)

MUCH of the "complication" which has entered the lubrication picture with the development of hundreds of kinds and grades of lubricants—each best adapted to its specifically intended use—can be simplified at the outset through more cleanly and orderly handling.

The Function of the Lubrication Expert

In his advisory capacity the modern lubrication expert brings you the key to more correct and economical lubrication on every piece of equipment. His duty is to assist you to get the best results in your own plant through personal "on-the-ground" analysis of your problems. In the matter of the storage and handling of lubricants he adjusts his recommendations to the storage facilities available. He is frequently able to simplify your problems—reduce the *variety* of lubricants being used—and at the same time increase the efficiency of your lubrication.

Standard Lubrication Engineers are ready at any time to advise you on specific problems or to conduct general lubrication surveys of your plant.

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STANDARD OIL COMPANY (INDIANA)

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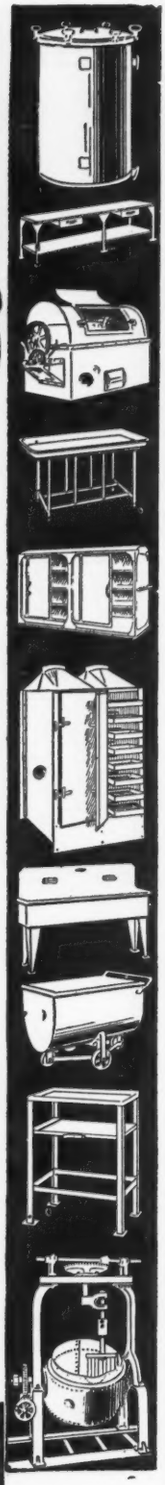
Name..... *Position*.....

Company.....



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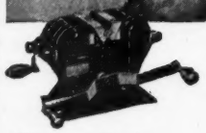

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MATERIALS
FOR THE FOOD MANUFACTURER

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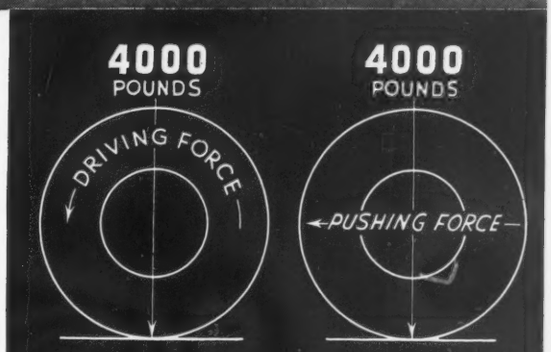

Weight on the wheels of a truck increases the traction in direct proportion to the weight carried. Since the weight of the FWD truck with its load is carried on its four driving wheels, none of the traction available on each wheel is wasted. The weight carried on the front driving axle of the FWD truck is available for driving the truck just as well as the weight on the rear driving axles—not a pound of weight is wasted, all is used to give the FWD the maximum in performance.

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Front axle 9,380 lbs.—39%.
Rear axle 14,620 lbs.—61%.
Total gross weight of combination 72,000 lbs.
Overall length—40 feet.

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THE FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wisconsin
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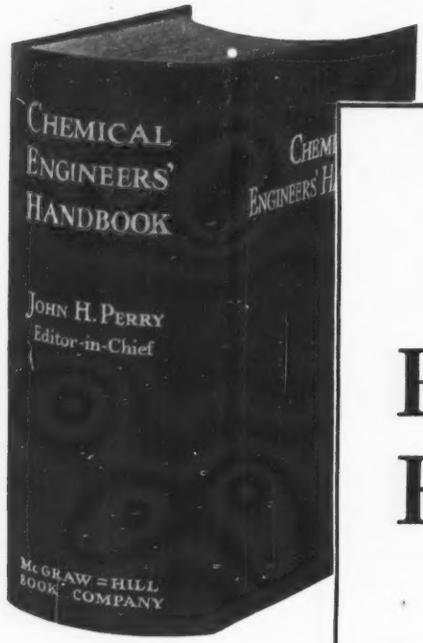

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SEARCHLIGHT SECTION
for Equipment Opportunities

MATERIALS FOR THE FOOD MANUFACTURER

DIRECTORY

PRODUCT	CARD NUMBER	PAGE
Alcohol	3	
Ammonium Phosphate	5	
Calcium Phosphate	5	
Chloramine	2	
Colors	1, 4	
Coumarin	2	
Distilled Alcohol	6	
Dry Essence of Spices	4	
Essential Oils	1, 2	
Flavors	1, 2, 4	
Methyl Salicylate	2	
Phosphates	5	
Phosphoric Acid	5	
Saccharin	2	
Salt	47, 48	
Sodium Acid Pyrophosphate	5	
Sodium Benzoate	2	
Sodium Phosphate	5	
Spice Essential Oils	1	
Vanillin	2	

1

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5

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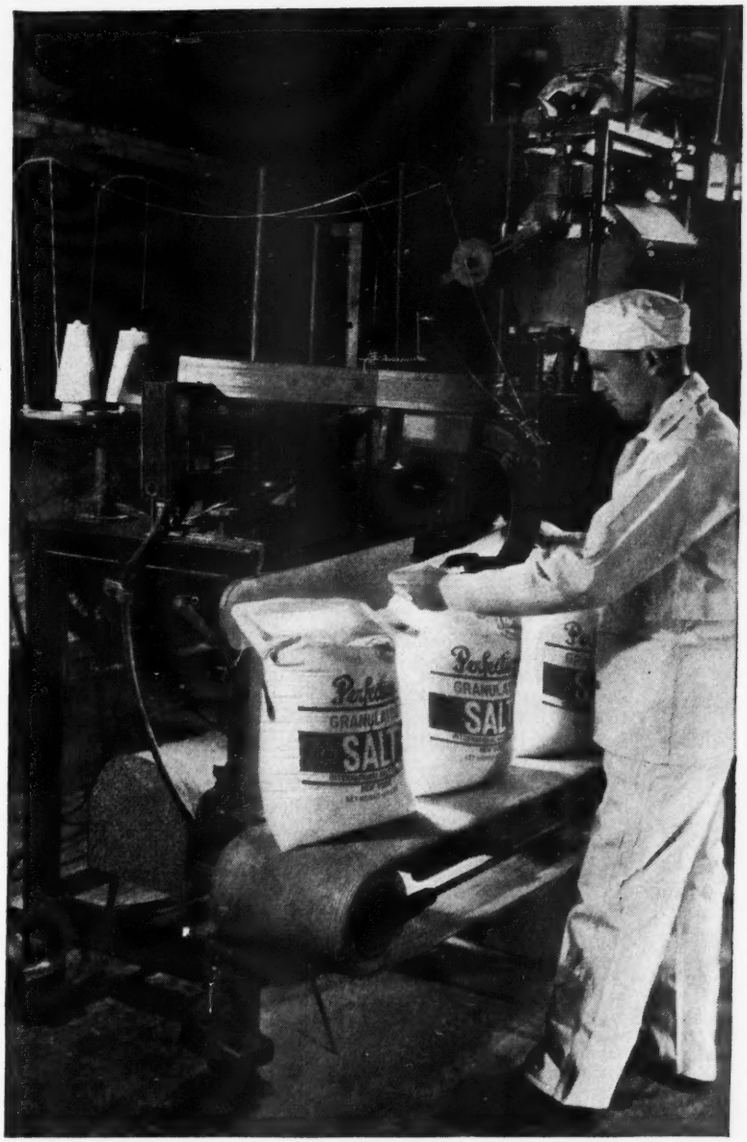
Approximate Composition of
CHOCOLATE COATINGS

Type	Chocolate Liquor	Sugar	Total Fat	Whole-milk Solids	Skim-milk or Buttermilk Solids
Bitter	100	0	50–56	0	0
Bitter-sweet	80–95	5–20	40–50	0	0
Mild bitter-sweet	50–75	25–38	38–42	0	0
Dark-sweet	25–45	40–50	34–42	0	0
Medium dark-sweet	20–40	45–55	32–42	0	0
High-grade light-sweet	15–25	40–50	34–39	0	0
Low-grade light-sweet	5–15	55–68	31–39	0	0
Sweet milk	7–17	35–55	28–39	12+	0
Ice cream bar	9–29	29–39	50–60	12+	3–6
Skim-milk, buttermilk, malted-milk	7–17	35–55	30–40	0	12+

Small quantities of flavoring materials, such as vanillin, coumarin, coffee, cinnamon, peppermint, orange, lemon, anise, and synthetic cocoa-bean flavor also may be used.



Above all claims and counterclaims

FOOD packers and salt producers sometimes disagree about the types or grades of salt best adapted for any particular food packing process.

Standing high above all argument, above all claims and counterclaims, the most important thing to know about salt is that it is produced by a company with the resources and facilities, the experience and the *will* to maintain the highest standards of quality.

As the largest producer of salt in the world, International has the essential resources and facilities. In more than three decades of growth it has gained wide experience. The International Salt Research Laboratory, guiding and controlling improvement in the production and use of salt, is evidence of the International *will* to maintain quality.

International Salt for every food packing use is made pure. It is handled by machines to guard that purity. It is properly packed to protect it in shipment and storage. If it is kept by you as pure as it is made, you can know that the salt you use in your production is doing all it can to maintain the goodness of your finished product.

International offers its Salt Advisory Service to industry at no cost or obligation. Any inquiry as to any use of salt will be welcomed. International Salt Co., Inc., Scranton, Pa., New York, N. Y.

PACKAGING THAT PROTECTS QUALITY

Illustrated above is one bag filling and sewing machine, one of the many modern packaging methods used to make sure that International Salt reaches every carton, every lined bag and barrel as pure and clean as it left the refining process.

STERLING QUALITY TABLE SALT

is steam-sterilized for purity by the International refining process. It is automatically packed in moisture-proof cartons with metal pouring spout on the side. The salt has none of the bitter taste that can be caused by magnesium sulfate (Epsom Salts).

See our exhibit at the 11th National Exposition of Power & Mechanical Engineers at Grand Central Palace, New York, Dec. 3 to 8, 1934.

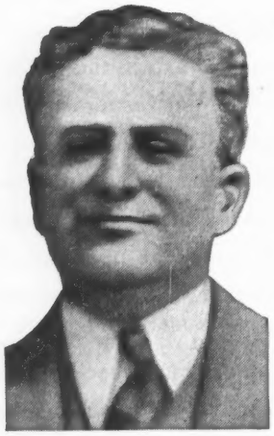
INTERNATIONAL SALT COMPANY

GENERAL OFFICES—SCRANTON, PA., *and* NEW YORK CITY

REFINERIES: *Watkins Glen, N. Y. • Ludlowville, N. Y. • Avery Island, La.* MINES: *Retsof, N. Y. • Detroit, Michigan • Avery Island, La.*
SALES OFFICES: *Buffalo, N. Y. • Philadelphia, Pa. • Boston, Mass. • Baltimore, Md. • Pittsburgh, Pa. • Newark, N. J. • New York, N. Y. Richmond, Va. • Atlanta, Ga. • New Orleans, La. • Cincinnati, Ohio • St. Louis, Mo.*

"Always Uniform— IN COLOR, SOLUBILITY, DRYNESS"

Writes MR. J. E. BROWN *in answer to our questions about Diamond Crystal Salt*



Mr. J. E. Brown, whose four-oven plant, the Atlas Baking Co., in Richmond, Virginia, meets its production demand by operating steadily 24 hours a day.

"WITHOUT any reservations," Mr. Brown continues, "we have found Diamond Crystal Salt better suited to our purpose than any other salt we've ever used... and that's been our experience for the past 22 years."

And from food men everywhere... from butter makers and canners, from meat packers, millers and bakers, wherever salt is used, we hear similar reports.

Because quality food men recognize that to obtain uniformly fine finished products, *all* their ingredients must be uniformly high in quality.

The exclusive Alberger Process of making Diamond Crystal insures them unvarying quality. A milder salt, more readily soluble and free from impurities — always. Why not try it in your plant? Diamond Crystal Salt Co., (Inc.), 250 Park Avenue, New York, N. Y.

Diamond Crystal Salt

UNIFORM IN COLOR . . . PURITY . . . DRYNESS . . . SOLUBILITY . . . SCREEN ANALYSIS . . . CHEMICAL ANALYSIS . . . CHARACTER OF FLAKE

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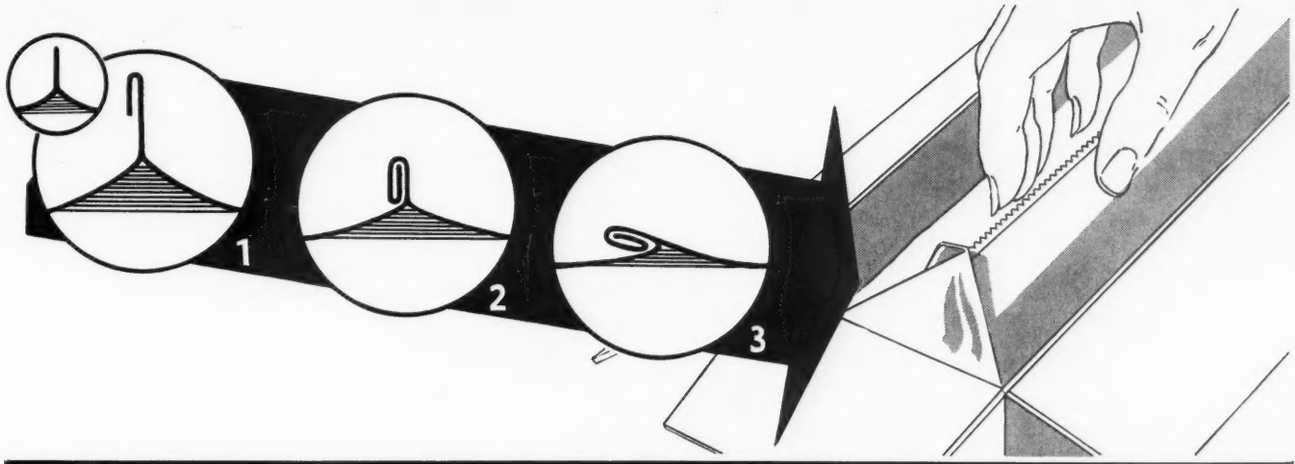
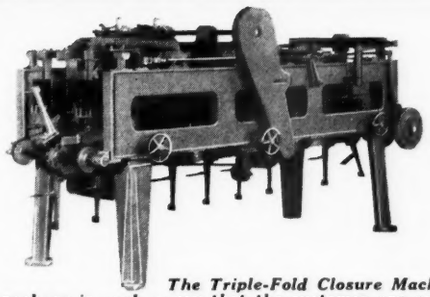


NEW CLOSURE Johnson's

Follow-up on Electric-Eye Wrapping & Quick-Conversion Cellulose Wrapping Machines

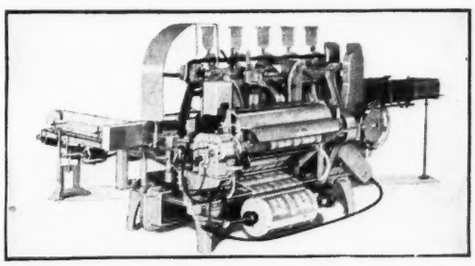


1934's Biggest Packaging Discovery!

The Triple-Fold Closure Machine, which closes the package in such a way that the customer can reclose it—the product-protecting way the manufacturer closed it. Package inaugurates "fresh until the last portion is used" merchandising!

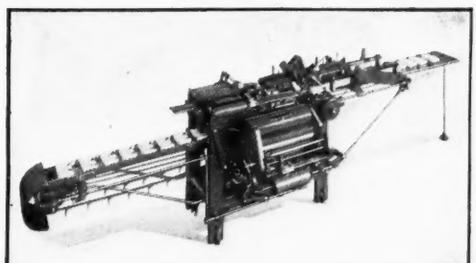
In 1933 . . .

the superhuman Johnson Located Panel Design Wrapper became immediately popular. At new low costs and high speeds, it put on and sealed a printed wax wrapper, gave better product protection and "brought-out," brilliantly, the colors of the wrapper.



In 1932 . . .

Johnson was already leading the development of cellulose wrapping machinery. Especially when the Quick-Conversion Cellulose or Cellophane Wrapping Machine appeared, which could be quickly changed to wrap as many as 9 different shapes or sizes . . . to do the work of 9 ordinary machines!



Pioneering has long been a habit with Johnson engineers. The packaging machine which the industry wants, yet no one has been able to build, particularly interests them. Currently they have triumphed with the Triple-Fold Closure. The successive achievements of recent years have left their marks on the entire packaging field.

It is to such forward looking men that you can submit not only your need of a specific machine, but your problem of how to perform an operation for which no machine has yet been built. Write us, or send the coupon below for details on the machines listed.

JOHNSON AUTOMATIC SEALER CO., LTD.
Battle Creek, Mich.

New York Office: 30 Church St., New York City
Pacific Coast: W. J. Holder, 3730 Scott St., San Francisco, Calif.

Johnson Automatic Sealer Co., Ltd.
Battle Creek, Mich.

I am interested in the Johnson equipment checked:

- ☐ Triple-Fold Roll Closure Machine
- ☐ Bottom Sealers
- ☐ Combination Carton Feeder and Carton Sealer
- ☐ Double Entry Top Sealers
- ☐ Combination Bottom and Top Sealers
- ☐ Gross Weight Scales ☐ Net Weight Scales
- ☐ Carton Liners ☐ Wrapping Machines ☐ Electric Eye ☐ Quick Conversion

Please ☐ mail the information ☐ send a representative

Name .....

Company .....

City ..... State .....

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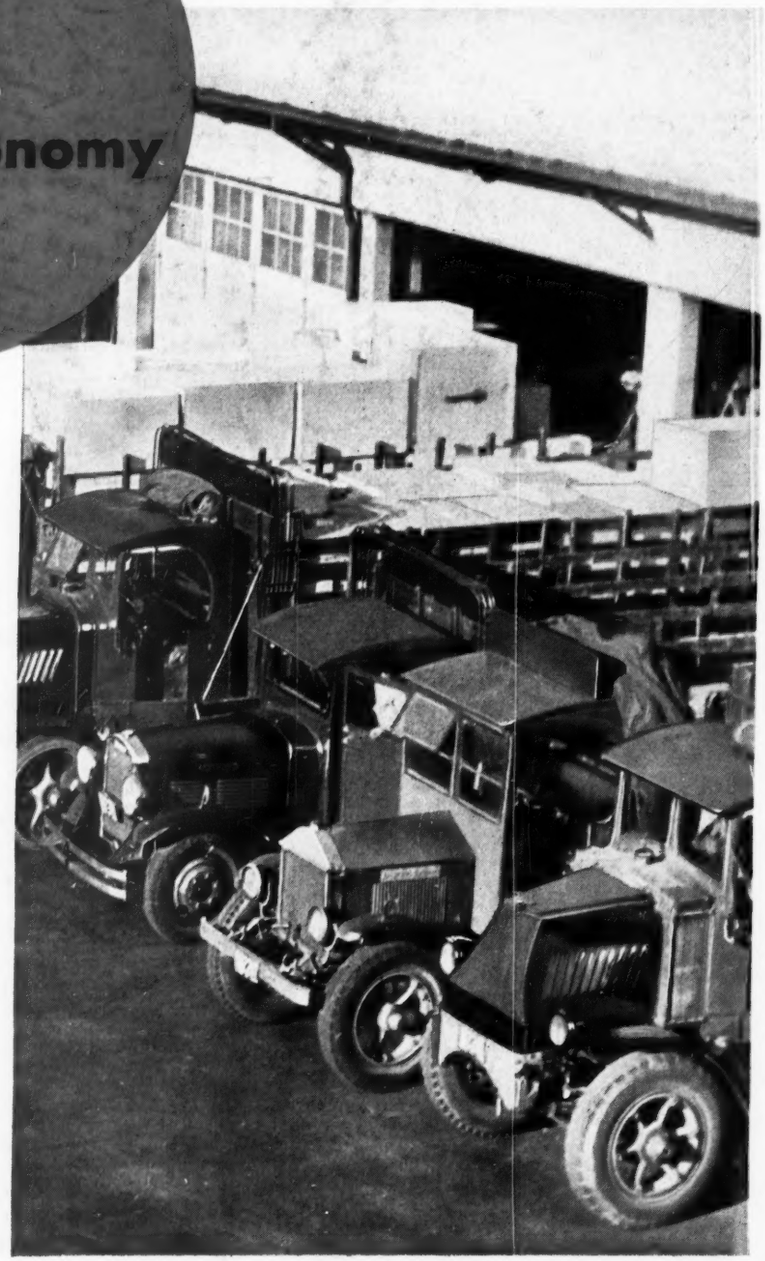
"The world's finest grease lubricant"

A *tested* and *proved* economy for



Trucks

TRUCKS give low cost miles when MARFAK is used for universals, wheel bearings, shackles and steering systems. MARFAK *doubles* the mileage between "grease" jobs. The largest transcontinental bus system in the world has proved that MARFAK is the most economical grease lubricant to use. Many truck fleet operators have found that MARFAK keeps expenses for repairs and replacements at a minimum.

TEXACO offers you MARFAK—a grease lubricant that has *proved itself able to do three times the work of ordinary greases.*

A Texaco Engineer will gladly give you ample proof—based upon performance in service similar to yours—that MARFAK is "The World's finest Grease Lubricant." Write to The Texas Company.

THE TEXAS COMPANY · 135 E. 42nd St., N. Y.

MARFAK

TEXACO REG. T. M.

THERE IS A TEXACO *tested* LUBRICANT FOR EVERY PURPOSE